

DETROIT PUBLIC LIBRARY

4th Stack

FARM

January Volume 124 No. 1 50 cents

Pioneer Journal of the Industry

CHEMICALS



**Technical Service
Is the Key That Turns
Processes to Profit**

How to Organize
Efficient Marketing

DETROIT PUBLIC LIBRARY
GENERAL INFORMATION, PER.
5201 WOODWARD AVENUE
DETROIT 2, MICHIGAN
PSM

WE HAVE TWO PRODUCTS . . . POTASH AND SERVICE

LAVOID HOLLOWAY

covers Arkansas, Louisiana, Mississippi, and Texas as P.C.A. Sales Representative. He is a graduate of the University of Arkansas, and has a solid background of experience.



WILLIAM "BILL" JOHN

now P.C.A. Sales Representative for portions of Illinois, Indiana, Kentucky and Missouri. A graduate of the University of Missouri, he has had extensive experience in the fertilizer industry.

**Your Men
on
our
payroll**

These men are two of the members of the P.C.A. sales team serving the fertilizer industry. While they are on our payroll, their chief responsibility is to you. Selling potash is but part of their job; the most important part is furnishing you with whatever service and information you require . . . both have the experience and background to do the job well. The P.C.A. salesman is your man . . . make good use of him.



New 60% Standard Muriate
New 60% Special Granular Muriate
New 60% Coarse Granular Muriate
Sulphate of Potash
Chemical Muriate - 99.9% KCL minimum

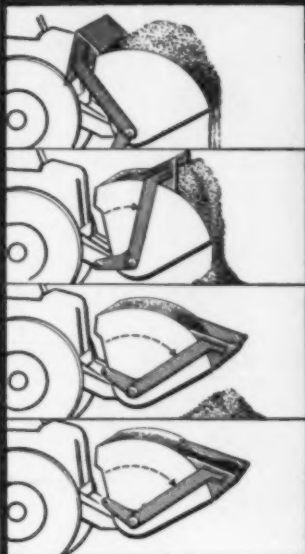
Quick Service - High Quality
Phone, write, telex, or wire us.
Phone STerling 3-4990, Washington
TWX No. - WA-331

POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO

General Sales Office . . . 1625 Eye Street, N.W., Washington, D.C.
Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.

New **PAYLOADER**® NO-SPILL Bucket



A strikerbar-spillguard blade, by hydraulic power, sweeps forward removing excess material. Blade remains forward in transport to retain load.



- ■ ■ Eliminates spillage during transport
- ■ ■ Saves costly floor and aisle clean-up
- ■ ■ Eliminates re-working spilled material
- ■ ■ Increases daily productive capacity
- ■ ■ Delivers uniform loads for "batching"

The "No-Spill" bucket is the latest of many **PAYLOADER** firsts, and makes the tractor-shovel a cleaner, more productive and more efficient materials mover than ever before. Its two features — the striking-off of excess material while loading, and preventing any loss of load while transporting — give many on-the-job savings and benefits:

1. Permits higher transport speeds for more trips and more production.
2. Delivers bigger loads as none is lost in transit.
3. Eliminates the dust nuisance caused by light, dry materials spilling in transit.
4. Prevents the accumulation and build-up of spillage along aisles — saves the cost and time of digging up and reprocessing such spillage.
5. Eliminates the contamination and waste involved when different materials are spilled on the same routes.

Three popular **PAYLOADER** sizes can be supplied with "No-Spill" buckets — the Models HA, H-25 and HAH. Your Hough Distributor will be happy to show you what they can do to improve materials moving efficiency on your operations. See him today or return the coupon.

HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.

THE FRANK G. HOUGH CO.

704 Sunnyside Ave., Libertyville, Ill.

Send information on "No-Spill" Buckets for **PAYLOADER** models.

Name _____

Title _____

Company _____

Street _____

City _____

State _____

1-A-1

Sam Lewis Veitch
PUBLISHER

Gordon L. Berg
EDITORIAL DIRECTOR

Vincent E. Squazzo
ASSOCIATE EDITOR

Phyllis Marron
ASSOCIATE EDITOR

Edna H. Jones
EDITORIAL ASSISTANT

John Harms
WASHINGTON BUREAU CHIEF

Boyer L. Veitch
ADVERTISING DIRECTOR

A. A. Ware
BUSINESS MANAGER

Dorothy E. Smith
CIRCULATION DIRECTOR

ADVERTISING REPRESENTATIVES

Chicago 1
Al Zilenziger
333 N. Michigan Avenue
STate 2-7128

Los Angeles 4
Townsend, Millsap & Co.
159 S. Vermont Avenue
DUnkirk 3-1211

New York 17
Rod Zilenziger
415 Lexington Avenue
MUrray Hill 7-1488

San Francisco 4
Townsend, Millsap & Co.
110 Sutter Street
SUtter 1-7971



MEMBER BUSINESS PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, **FARM CHEMICALS**, serves primarily those persons responsible for management, marketing and production. It has a qualified circulation for selected executive and supervisory persons within specified segments of these industries, as well as in certain closely allied fields. Subscription rates to all others are: in the U.S., its possessions, Canada, Cuba and Panama: \$6.00; in other countries: \$7.50. Current issue 50 cents. Back issues \$1.00. (Current issues become back copies on the 5th of the month following publication.) Established in 1894 as *The American Fertilizer*.

© Ware Bros. Co. 1961

Published monthly by
WARE BROS. COMPANY
317 N. Broad Street
Philadelphia 7, Pa.
Telephone MArket 7-3500

Accepted as Controlled Circulation
publication, Philadelphia, Pa.

FARM CHEMICALS

Vol. 124 No. 1 January 1961

MARKETING

- 12 Principles of Marketing Organization *Eugene Mapel*
- 18 How Monsanto Applied Principles of Marketing Organization
John L. Gillis

PRODUCTION METHODS

- 24 Standardization of Raw Materials in Round Table Spotlight

MERCHANDISING AIDS AND PROMOTION

- 28 "Sales Snatcher" Has Appeal

SPECIAL REPORTS

- 10 Pesticides in 1960
- 48 Index of Articles and Authors in 1960

TECHNICAL REVIEW

- 52 Abstracts of Papers from Agricultural Engineers Meeting

MATERIALS HANDLING AND CUSTOM APPLICATION

- 53 Fiber Glass Tanks—"They Stop Corrosion"

DEPARTMENTS

- 4 What's Doing in the Industry
- 6 Letters
- 8 Washington Viewpoint
- 30 News of the Industry
- 34 Associations and Meetings
- 34 Calendar
- 36 People
- 38 Government
- 38 Chemicals
- 39 Equipment and Supplies
- 44 Suppliers' Briefs
- 41 Reader Service
- 45 Patent Reviews *Dr. Melvin Nord*
- 47 Pest Reports *Kelvin Dorward*
- 56 Editorial: Spotlight on Farm Chemicals

THE COVER PICTURE

John Hoffman of Lancaster Bone Fertilizer Company, Lancaster, Pa., raises a question on production methods at the Baltimore meeting, November 9, 10 of International Min. & Chem. Corp.'s Technical Service Clinic. Similarly, questions were raised throughout the country; Minneapolis, Indianapolis, New York, Raleigh, Toledo, Winter Park, Montgomery, Kansas City, Tyler and Jackson. *Photo courtesy of International Minerals & Chemical Corp.*

FARM CHEMICALS



Electron micrographs showing plate-like Micro-Cel E and spherical Micro-Cel B structures.

1 μ

Ship more toxicant per carload with Micro-Cel!

Micro-Cel®, Johns-Manville's inert synthetic calcium silicate, permits 75% DDT concentration. Other freight-saving, high toxicant concentrations include: 50% Chlordane, 70% Toxaphene, 50% Heptachlor, 75% Aldrin and 50% Aramite. Micro-Cel's unique structural characteristics (surface areas up to 175 sq. m/gr) reduce caking, improve flowability, increase suspendability and extend shelf life. For further information, samples and technical assistance, mail in the coupon below!

JOHNS-MANVILLE 
Celite Division

1960

JOHNS-MANVILLE, Box 14, New York 16, N. Y.
In Canada: Port Credit, Ontario.

☐ Please send further information.

I am interested in using Micro-Cel with the following toxicants: _____

☐ Please send free sample of Micro-Cel.

☐ Please have your local Sales Engineer contact me.

Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ County _____ State _____

WHAT'S DOING IN THE INDUSTRY

F
C

WORLD FERTILIZER CONSUMPTION ON THE RISE

During the last decade, consumption of fertilizer in the world has increasingly shown an upward tendency. From 12.7 million metric tons NPK in the period between 1949-50, the consumption rose by some 28% to 17.6 million metric tons in 1953-54, to reach 23.1 million metric tons in 1958-59. This equals an increment of 31% during the last five years. According to statistical data, this development has been shared by nearly all continents at relatively equal rates.

The use of fertilizers in the Federal Republic has risen considerably in 1959-60 in comparison with the previous year. The increases amounted to: nitrogen, 46,000 tons (8 per cent); phosphoric acid, 93,000 tons (15 per cent); potash, 41,000 tons (4 per cent).

BIOFORM CORP. JOINS IMC ORGANIZATION

Bioform Corp., active in research, development and production in the microbiological fermentation field, will become a part of the International Minerals & Chem-

ical Corp. Officials of the two companies said that the final terms of the stock transaction agreement by which IMC will acquire Bioform were still being worked out but that negotiations were expected to be completed by the end of the year.

NEW ANTARA DISTRIBUTOR

Missouri Solvents and Chemical Co. has been appointed distributor for two major chemical product lines of Antara Chemicals, a division of General Aniline and Film Corp. Under this new arrangement, the Missouri company will handle Igepal surfactants and Cheelox chelating and sequestering agents for the St. Louis and Kansas City areas, as well as south Illinois, west Kentucky, Tennessee, north Arkansas, Missouri, Kansas, south Iowa and southeast Nebraska.

The Igepal series is used by producers of detergents, emulsifiers, wetting agents and foaming agents in formulations of consumer and industrial products. The Cheelox sequestering agents are employed in the textile, leather, paper and other industries, as well as in the formulation of agricultural chemicals.

SHELL PATENTS NEW INSECTICIDE

A patent on the insecticide DDVP (0, 0-Dimethyl 0-2,2-dichlorovinyl phosphate), a new weapon against flies, mosquitos and other disease-bearing and crop-destroying insects, has been issued to Shell Development Co. DDVP is sold by Shell Chemical Co. under the trademark Vapona insecticide.

Shell Chemical has recently obtained a new label acceptance on Vapona from USDA. This allows spraying a 1/2 per cent solution in the normal manner to control flies, fruit flies, gnats, cockroaches, ants, spiders, silverfish and other insects.

SULPHUR INSTITUTE ADDS TO EUROPEAN STAFF

Dr. E. W. Bolle-Jones has been appointed to the European staff of The Sulphur Institute as assistant to the vice president. He is presently with the Agricultural Marketing Div. of Shell International Chemical Co. and will assist Dr. Rene Leclercq in the development of an expanded research program in Europe dealing with the uses of sulphur and sulphur products. He will join the Institute on January 2, and he will be located in London.

R. E. FRASER DIES

Funeral services for Ralph E. Fraser, vice president of Summers Fertilizer Co. and Northern Chemical Industries, were held recently in Baltimore, Md. He was a nationally recognized expert in the agricultural chemical field. He served as director of the National Fertilizer Association and a member of several national and local committees on safety, production and research projects in the fertilizer industry.

OVER A MILLION FARMS APPLY CONSERVATION

Farmers used the Agricultural Conservation Program cost-sharing assistance to establish conservation practices on 1,005,598 farms and ranches in the 1959 program year, according to the official summary now being published by USDA. These farms and ranches contained 32 per cent of all U. S. farmland.

Meeting Highlights

NEXT MONTH:

14th Annual Southern Weed Conference

Hotel Soreno, St. Petersburg, Florida

January 18-20. Latest trends and test results on use of herbicides to control weeds in the South will be discussed. The program will include sections on weed control in specific crops, control in pastures and turf, brush and weed control in non-crop areas, fundamental aspects and control of specific weeds, horticultural and aquatic weed control, Extension aspects, public health aspects and new developments.

Custom Spray Operators' Training School

University of Illinois, Urbana, Illinois

January 25-26. The 13th annual session will be sponsored by the University of Illinois and the Illinois National History Survey. Some 700 persons who are associated with the agricultural chemical industry are expected to attend. The latest findings in the development and application of chemicals will be discussed.

Colorado Agricultural Chemicals Association

Cosmopolitan Hotel, Denver, Colorado

January 26-27. The business meeting on January 26 is closed as to members of the Association, but the banquet on January 27 is open to all members of the chemical industry and interested jobbers and formulators of farm chemicals.



“I’m a
bag that
gets knocked
around a
lot in my
business.”



“Me, too. And I don’t think I could stand it if Chase didn’t know how to pick the paper!” Fact! Chase buys all these types of paper on the open market: stretchable, non-skid, creped or regular kraft...fully bleached, semi-bleached and colored outer sheets. This means Chase has the pick of the best from *many* sources. Result: Bags with maximum strength, minimum bulk, more value for you. You pay no more for the *best* bags, beautifully printed. Make sure you get them—from Chase!

CHASE BAG COMPANY

355 Lexington Avenue—New York 17, N. Y.
32 Plants and Sales Offices Coast to Coast

MULTIWALLS • TEXTILE • PLASTIC AND LAMINATED BAGS • CONSUMER-SIZE PAPER BAGS
AND OTHER PACKAGING MATERIALS

LETTERS

F
C

REPRINTS NEEDED

Lawrence, Kansas

I was wondering if you have reprints available of your articles. I was particularly interested in your article "Sell a Mental Concept" by Ralph Everett in the September 1960 (123:9) issue. If they are available, I would like to have 10 copies of this article.

I am also enclosing an order for 1 copy of your 1959-60 Successful Selling Series.

Yours truly,
MARSHAL MCGLAMERY
Vice-President
AGRICULTURAL BUSINESS
CO., INC.

San Francisco 11, Calif.

We would like to order single copies of two of your articles: "How to Figure Sales Potential" in the November 1959 issue and "Market Research and Its Importance to Farm Chemicals Manufacturers" in the April 1960 issue.

Very truly yours,
A. W. WERRY
Technical Director
LESLIE SALT CO.

Albion, Indiana

Please send me a copy of "Sulfur in Ag-

riculture," abstracts from the sulfur symposium at the meeting of the American Chemical Society. It appeared in *American Fertilizer*, volume III, September 17, 1949.

Sincerely,
MILFRED W. RICHMAN
Work Unit Conservationist
SOIL CONSERVATION SERVICE

Luling, Louisiana

We would appreciate your forwarding us six copies of the November 1960 issue of *FARM CHEMICALS*.

Thank you.

Very truly yours,
H. L. PAYTON
Plant Manager
MONSANTO CHEMICAL CO.

Atlanta 1, Georgia

Please send me one bound copy of the 1959-1960 Successful Selling Series. I am enclosing a check for this amount.

Thanking you, I am,

Very truly yours,
G. A. BURSON
Director, Plant Food Services
COTTON PRODUCERS
ASSOCIATION

Wilmington 98, Delaware

I would like to know if you have compiled a current "Summary and Facts on Highway Landscaping Requirements . . . State by State."

If a current reprint of this summary or one similar is available, please send 50 copies to our Advertising Dept.

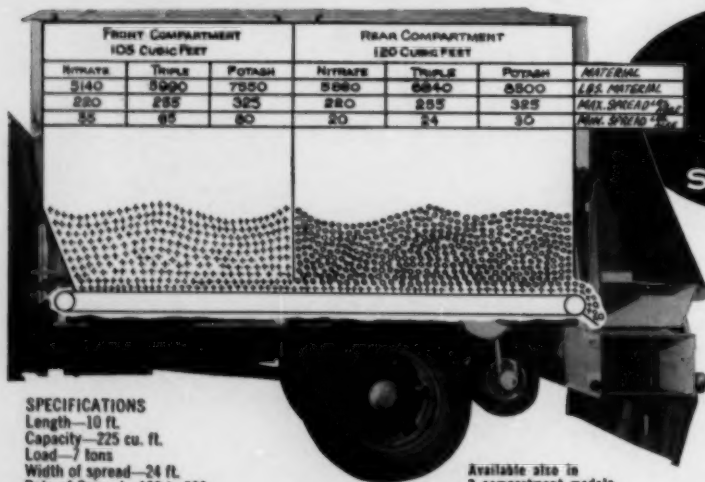
Sincerely yours,
JOSEPH W. VAN TRUMP
E. I. DU PONT DE NEMOURS
AND CO.

FERTILIZER SPECIALIST RETIRES FROM SERVICE

Kenneth D. Jacob, recognized as a world authority on fertilizer chemistry and technology, retired January 31, as special assistant to the director, Soil and Water Conservation Research Div. after more than 42 years of Federal service. He is joint author of 175 or more articles and book reviews appearing in scientific journals, encyclopedias and government reports dealing with the chemistry and technology of fertilizers and fertilizer materials.

A TWO COMPARTMENT MIXER SPREADER THAT WORKS!

COMPLETE PLANT FOOD CONTROL WITH TWO BASIC INGREDIENTS



SPECIFICATIONS
Length—10 ft.
Capacity—225 cu. ft.
Load—7 tons
Width of spread—24 ft.
Rate of Spread—100 to 500
lbs. per acre

WRITE, WIRE or PHONE COLLECT
for further information about the 2-C, plus other fertilizer bodies, a full line of bulk feed bodies, bulk and sack bodies, unloaders and the new Feedliner, a bulk feed, bulk fertilizer body.

S

Available also in
3 compartment models

MODEL
2-C
MIXER
SPREADER

The Average Driver
Can Mix and Spread
with the Best

- Stock two basic ingredients—spread any ratio to fit soil and crop needs.
- Easy for driver to set rates of application.
- Non-corroding stainless steel at all critical operating points eliminates most "Stoppages" due to corrosive effects of fertilizer. Hydraulic fan drive.
- Two compartments hold enough goods to spread 200 pounds of mixed fertilizer per acre over 70 acres with a single load.
- Unloads two different materials without mixing. Each bin can be unloaded separately.
- High humidity does not interfere with normal operation.
- Can spread high amounts of one material and very low amounts of another.
- All-weather wheel drive absolutely eliminates spreading rate errors.

SIMONSEN MANUFACTURING CO.
DEPT. FC QUIMBY, IOWA PHONE 72

usPp

Headquarters For ALL Phosphates Used In High Analysis Fertilizers

For requirements contact our Sales Agent—BRADLEY & BAKER

U.S. PHOSPHORIC PRODUCTS

TAMPA, FLORIDA

Division

TENNESSEE



CORPORATION

WASHINGTON VIEWPOINT

F
C

► *Orville Freeman, new Agriculture Secretary, shares a "stubborn streak" with Secretary Benson; in some other respects, he is almost an exact opposite.*

► *Two immediate goals: Start whittling down the wheat surplus, and begin holding down the rising abundance of feed grains. New legislation would be required.*

The new Secretary of Agriculture, Orville Freeman, is a strong believer in price supports and in production control. In this respect, and in some others, Freeman is almost the exact opposite of Secretary Ezra Taft Benson. Other major points of difference include political savvy, of which Freeman has an abundance, and background—Freeman is a city boy, and Benson was raised on a farm. One thing they have in common is a strong stubborn streak. It was partly because of stubbornness that Benson got into so much hot water with Congress—and unless Freeman avoids a similar mulishness, he may head into the same difficulty.

Freeman's avowed mission to Washington is to do all that is necessary to raise farm income. This means, generally, using various government price-raising mechanisms in conjunction with strong production curbs. Freeman is not likely to increase price supports very much without accompanying such increases with tougher curbs on output. He believes that the two must go hand-in-hand.

There are two immediate goals in the minds of the new leadership at the Department of Agriculture. These are to start whittling down the wheat surplus, and to begin holding down the rising abundance of feed grains, including corn, oats, barley and grain sorghums. It is in these two commodity areas where most of the activity in the new year will come. An effort will be made to impose new restrictions on these commodities starting with the 1961 crops.

Ideas on wheat are jelling fast. A wheat study committee headed by Dr. John Schnittker of Kansas State University has been working on proposals for President-elect Kennedy for several months. The recommendations are now in the hands of the new officials due to take office on January 20. Generally, the committee says that some 11 million acres would have to come out of wheat production. Current permissible acreage now is 55 million acres. This is necessary, the study says, to keep the total grain supply from increasing.

Farmers would get wheat certificates from the government which would entitle them to sell stated amounts of wheat as food grain. The total amount of the certificates would be set at about 200 million bushels below the estimated total consumption of

wheat. The difference would be made up by sales of presently-owned government surpluses. In order for any farmer to get a wheat certificate, he would have to cut his acreage by at least 10%. This retired land could not be used for any other crop. Farmers who cut their acreage more than 10% would be eligible to receive cash rental payments from the government on the amount retired above the 10% level.

The feed grain plans of the new Administration have not progressed as far as the wheat plans. But essentially, they would call for some reduction in corn, primarily, with payments to farmers in the form of government-owned grain to make up for the amount of corn lost through land retirement.

Both the new wheat and feed grain plans require new legislation. There are signs that these proposals will be made to the Congress in March. Congress this year looks to be about as conservative as it has been during the past few years, indicating that such Kennedy-Freeman plans will have rough sledding. The farm proposals will be an early test of the new President's capacity to get what he wants from a Congress that is controlled by his own party. Republican leaders say there will be no "honeymoon" for the new President because of the slim margin of victory, that is, the "loyal opposition" will start trying to trim the new President's sails the moment his proposals are made officially.

But Freeman is not expected to wait for action by the Congress. The Secretary is endowed with many powers on the price-support and production-control fronts which the Democrats have been saying Benson has refused to use. This not only has put Freeman on the spot, but it is a spot we're told he is very willing to be on. He is likely to provide token price support increases very shortly after he takes office. This is expected to show farmers that the Democrats will be keeping their campaign promises.

Acreage reduction must, however, await congressional action generally. Allotments now are at the minimums permitted by law. The new Secretary does have some latitude, however, in making farmers stick closer to the current controls than many of them do. For example, he could make a condition for obtaining price support or other federal benefit that farmers must adhere to all government controls affecting their crops. This, usually called cross-compliance, would

This familiar symbol



**represents the extra care
that goes into...**

SWIFT'S MINUTE MAN PHOSPHATES

**Phosphate Rock—Ground and Unground
Triple Superphosphate**

Extra care at Swift's Phosphate Center means extra care in every stage of filling your needs . . . extra care in prospecting and mining . . . extra care in processing and quality control . . . extra care in scheduling and shipping . . . even extra care in record keeping.

It is the kind of extra care you get only from people who know they serve themselves best by serving you best, just as the Minute Man, who symbolizes Swift's phosphatic products, served himself by serving others.

You'll enjoy doing business with Swift's Phosphate Center . . . with dedicated people who want to serve you with extra care. Have a Swift Phosphate Center Representative outline the advantages Swift's service offers you in phosphates—triple, phosphate rock or ground phosphate rock.

THE SERVICE CENTER FOR ALL YOUR PHOSPHATE NEEDS

SWIFT & COMPANY
Phosphate Center • Bartow, Florida



To Serve Your Industry Better

WITH MINUTE MAN PHOSPHATE ROCK, GROUND
PHOSPHATE ROCK AND TRIPLE SUPERPHOSPHATE

PESTICIDES IN 1960

A special report on the industry's experiences, prepared by the National Agricultural Chemicals Association.

SALES of pesticide chemicals in 1960 averaged three per cent over 1959 figures, totaling an estimated \$285 million at the basic manufacturer's level.

Ever since World War II, the Pesticides Industry has been a growth industry. Its history, however, has been one of rapid expansion, followed by readjustment, and then by further, solid gains. The gains in sales over the past four or five years indicate that this irregular growth pattern may be leveling off into a steady climb.

Some ups and downs were experienced in sales of different categories of Industry products in 1960, as product use was adjusted to the severity of pest infestations and the vagaries of the weather. Insecticide sales were off somewhat in 1960. On the other hand, due to the generally wet, cool season, fungicide and herbicide sales were up.

Of special interest was the gain in herbicide sales. These were reported up seven per cent over 1959. The increase reflects a wider use of herbicides designed to control specific weeds, brush, and grasses. Even more important for the future, it is now becoming obvious that rising labor costs for weed and brush control along roadsides, in recreation areas, on lawns, and in public parks as well as in agriculture are speeding the trend toward greater use of chemicals for this kind of work.

While the sales curve for pesticides has been and will continue upward, profit margins have been narrowing. This trend, common to nearly all business today, affected pesticides more acutely than many other industries in 1960. Besides cost increases for labor, materials and distribution, agricultural chemical firms faced sharply rising expenses for research and development.

Not only is the discovery of new products becoming more expensive, but expenditures are also rising for product testing to meet the ever increasing requirements for government approvals.

Various companies report that it now costs from \$1 million to \$1.5 million to research, test, and put a new product on the market. Advertising and distribution costs are in addition. Some companies have been forced to curtail their research activities because of rising costs. Those continuing or expanding research tend more and more to concentrate upon products and use areas which offer major sales potentials.

(Continued on page 46)

WASHINGTON VIEWPOINT

mean that farmers who ignored controls on one crop could not get support on another on which they observed controls. This could be a very effective persuader.

Who is Freeman? He is just winding up his third two-year term as governor of Minnesota. He ran for an unprecedented fourth term, but lost out. He worked hard for Kennedy's election, and nominated him for President at last summer's Democratic convention. This put him in line for consideration for a top government position. He wanted to be Secretary of Defense. Then, when that was out, he sought to be Secretary of Labor. He had told constituents that he didn't want to be Secretary of Agriculture. That was the last thing he wanted, but he settled for it.

Freeman is an unknown quantity as far as lawmakers in Washington are concerned. He is no dreamer about farm problems, and will attempt to improve the farm economy along "practical" lines, his advisers tell us. He favors government farm research, and is believed to be friendly to the Agricultural Conservation Program (ACP), which pays a cost-share of 50% for application of conservation measures, including lime and fertilizer, on farms. Freeman is a tough campaigner, and has a chance to get the farm problem off dead center. But the big question of whether he can do it rests with how well he gets along with Congress.

Opposition to his proposals already is hardening in some quarters—because of his "liberalism." The South, for example, does not like the choice. The powerful Farm Bureau also doesn't like Freeman, preferring rather the approach laid down by Benson.

Freeman's main farm organization strength comes from the Farmers Union which is strong in his home state. It is from the Farmers Union, too, that he has taken much of his farm philosophy. And that philosophy generally favors strong government action to raise farm income and to control production.

What does the Freeman influence mean to industries selling the farm market? That's the \$64 question, but it is possible to come up with at least part of the answer. We doubt seriously that there will be any change in the agricultural economic outlook for 1961 because of it. Spring 1961 sales, given good weather, are expected to be better than last year—bigger 1960 crops and more optimism among farmers. There is not likely to be the kind of cutback in any crop for 1961. That means another year of record farm income is in sight.

But if Congress does not enact new laws this year, there is likely to be much confusion on the part of the farmer as the 1962 production season gets under way. Farmers at that time may be unwilling to go in for increased purchases because they may not know what kind of programs they will be working under in 1962. Many of them do face production cutbacks in that year, but chances are they won't know by how much—or even *whether* there will be acreage reductions. It is not 1961 that is likely to be upsetting in the farm market, but 1962. ▲



Serving a high fertilizer consumption area, Glasgow Fertilizer Company specializes in corn and tobacco blends sold under the "Big G" brand name. Read how this locally owned and operated manufacturer holds down corrosion costs with SPENSOL GREEN*.



Rogers Wells, Jr.
Sec.-Treas. and Plant Mgr.
Glasgow Fertilizer Company.



Weber Shipp
Vice President of Sales
Glasgow Fertilizer Company.

Kentucky's New Glasgow Fertilizer Co. Becomes Big User Of SPENSOL GREEN:

Modern fertilizer manufacturing facilities deserve the most advanced ammoniating solution. So it is no wonder that Glasgow Fertilizer Company of Glasgow, Ky., uses non-corrosive SPENSOL GREEN in its modern plant—one of the newest in that state.

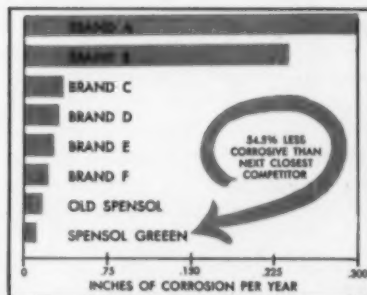
6,000 to 9,000 tons of bulk and bag goods is the first year goal of this ambitious company. With heavy production schedules to meet, any down time caused by corrosion damage would be costly. Glasgow solves

this threat by controlling corrosion with genuine SPENSOL GREEN Ammoniating Solutions.

New equipment stays new much longer when it is protected from the unseen ravages of corrosion. That's why it will pay you, too, to insist on SPENSOL GREEN, the non-corrosive solutions. Compared to competitive brands of ammoniating solutions, SPENSOL GREEN's advanced corrosion inhibitor proves to be at least 54% more effective!

Here are the laboratory results:

*A trademark of Spencer Chemical Company



Cut Corrosion costs at least 54.5% by making your next order genuine SPENSOL GREEN! Contact your Spencer representative right away.

Insist on

SPENSOL GREEN



NON-CORROSIVE AMMONIATING SOLUTIONS

Spencer Chemical Company
Dwight Bldg., Kansas City, Missouri

Sales Offices: Atlanta, Ga., Chicago, Ill., Memphis, Tenn., Omaha, Nebr., Kansas City, Mo.
Works: Pittsburg, Kans., Henderson, Ky., Vicksburg, Miss.

Principles Of Marketing Organization

By EUGENE MAPEL

"We're a small company in the farm chemicals industry. I don't think this total marketing concept is for us."

How many times have you heard that statement? Eugene Mapel, vice president of the Chase Manhattan Bank, had the answer as he led off the second annual Farm Chemicals Marketing Seminar (FCMS) in New York City. He said:

"A large organization may have a specialist for each minute phase of marketing, while a small organization may make one man responsible for all elements of marketing."

"The primary consideration is that all elements of the total marketing job are recognized, accepted and competently executed."

The following is a condensation of Mr. Mapel's outstanding FCMS presentation on the elements of marketing organization. It contains valuable information for any farm chemicals company—large or small.

BEFORE plunging into the subject of marketing organization, I am compelled to express this reservation: Too much homage can be paid to organization.

You all know companies that have a new vice president in charge of marketing. Every function of marketing appears to be provided for. All the boxes on their organization chart are in a beautiful symmetrical alignment. In some cases, it does not matter. Their marketing practices need not change one iota.

In these cases, they cannot change because their concepts have not changed. No marketing organization can be a success unless it is built upon a solid conceptual foundation.

DEFINITION OF MARKETING

Let's begin with a definition of Marketing. Marketing is the planning, organizing, policy setting, action taking, and performance measuring that is designed

to give each employee the best chance to do the most effective job in each selling situation.

Marketing is not just the development of new products or new services. It is not Market Research, it is not Advertising and Promotion, it is not a planned program of calling on customers.

Marketing is the skillful blending of all these elements into a unified whole.

THE MARKETING WORK OF TOP MANAGEMENT

In most strong organizations, the chief marketing officer is also the chief executive officer. As salesmen, we naturally think of the chief marketing officer as the chief executive officer—fortunately it is true.

Marketing begins with top management. Only top management can provide the climate, the discipline and the leadership required for a successful marketing program. Only the chief executive officer and the other senior executives can activate and energize an effective marketing program. Top management must know the customers and prospects; it must set the objectives; establish the policies; develop the plans; and create the organization.

IDENTIFYING AND STUDYING CUSTOMERS AND PROSPECTS

Any sound marketing plan for any company begins with a searching look at customers and prospects. From this study of the characteristics, behavior, habits, needs, and objectives of the customer the company's objectives are determined.

Objectives are the responsibility of the chief executive officer and the other senior officers. They can be given vast amounts of staff assistance, but theirs is the ultimate responsibility. No one else can establish objectives which unify the company and give direction and purpose to its efforts.

The word objective is a troublesome one. It is

Marketing organization must start from a solid conceptual base and not with a "beautiful symmetrical alignment of boxes on an organization chart,"

**says this leading marketing authority. How these ideas were put into practical use by Monsanto Chemical Company is explained by John Gillis on page 18.*

troublesome because its meaning has become blurred by being used, abused and ignored. Actually, a complete objective is a specific goal which includes a time requirement.

A statement such as: Obtaining an ever-increasing share of the available farm chemical business may express a beautiful sentiment but it is not an objective. At the minimum, an objective must include the specific percentage of the available business which is desired and realistically attainable within an allowable time.

In a business such as farm chemicals, where regional influences, perishability, and transportation costs are important, these factors must also be reflected before an objective is complete.

After the objectives are set, these same senior executives must establish policy. Policy is the framework within which the objectives are to be achieved. Policy defines the area in which the business will operate and how it will operate to achieve its objectives.

When broad policies are set, plans for attaining the objectives within the policy framework must be developed. The chief executive officer and the other senior executives evaluate alternatives and decide what course of action gives the most promise of attaining the objectives.

Once the plans are completed, the senior executives will use the objectives, policies, and plans and apply the familiar principles of structuring an organization to develop an organization structure within which the company can execute its plans and attain or exceed its objectives.

MARKETING

One of the components that will be included in the top organization structure is that of marketing. It is

necessary to discuss marketing and marketing organization in general terms here.

There is no single marketing organization that is right for all companies. The right way to put marketing components together depends on the company's objectives, its business, its competitive environment, and even its personnel in each specific marketing situation.

There is, however, a body of essential work that must always be done.

MARKET RESEARCH

The first element of Marketing is Market Research. Market Research is probably not a good term. It is not sufficiently comprehensive. The term is somewhat misleading. It is not practical to research an entire industry or an entire market. A sample is researched and the expected demand is projected from the sample to the entire market.

A market is the sum total of individual customers trying to attain their own objectives through the use of a particular product or service. We really research individual customers and prospects and from this research develop knowledgeable insights into their aggregate behavior.

In Market Research, these questions must be asked and answered: who are the customers; what are the customers' objectives; what products or services do they want and need; what product, what purity, and what quality will meet the customers' objectives—not the company's objectives but the customers'; what will the customer pay for the product or services he wants; how can and will he pay; then, what is our purpose and what is our objective?

Market Research must develop the right answers to these questions and then help specify the product in terms of the customers' needs.

Market Research must also feed back information for use of top management in re-examining and re-appraising the way in which the needs of customers have been used to develop the company's broad objectives.

It would be a mistake to imply that any one element of marketing begins where another element ends. An Advertising & Promotion campaign should both proceed and coincide with an aggressive solicitation campaign.

There must be a constant interplay between all elements of the total marketing job. But, it is convenient to think of the work sequentially for our purpose.

MARKETING STRATEGY PLANNING

The next element of Marketing is Marketing Strategy Planning.

The purpose of Marketing Strategy Planning is to answer one very large question—how can the customer best be reached and influenced? The ramifications of this question are obviously infinite. But, this is the basic question.

Marketing Strategy Planning is not strictly a marketing function. Planning marketing strategy runs the entire gamut of reaching and influencing cus-

MARKETING

Principles of Marketing Organization

(Continued)

tomers. The basic responsibility should be assigned to Marketing as a *staff* function. But, it cannot carry this responsibility alone. Organization-wide teamwork and effective communication will be required.

When planning marketing strategy, it is critically important for a company to recognize that it must study and adapt to its own competitive environment. *Survival* alone is not enough. A company must *thrive in its own competitive environment*. There is no real alternative to accepting this fact. The marketing strategy that is right for one competitive environment can be, *indeed is likely to be, wrong* for another competitive environment. The products or services that one company must offer to *thrive* in its own competitive environment, can be *foolish extravagance* for another company to offer in another competitive environment.

High analysis fertilizers, which reduce transportation and handling costs on-the-one-hand and fertilizers which meet the customers' minimum purity requirements on-the-other, can both be regarded as examples of tailoring marketing strategy to realistic marketing considerations.

The ideal marketing situation is the one where your product has a decided and demonstrable superiority over competing products. Under these conditions, the Marketing Strategy Planner merely selects the best way of demonstrating this superiority and leans back while the inevitable orders flow in. American business lore holds that this is a typical, or at least a frequent, situation. It is not. Such situations have always been rare. They will become even rarer.

Why have some companies an avowed purpose of developing new products which obsolete their current products? They recognized the inevitable. Current products will be replaced by *their* new products or *somebody else's* new products.

The typical marketing situation today is the one where competing products are about equally helpful to customers. Why is this true? *First*, products have become more complex and product development has become more expensive. *Second*, individual technical competence is increasing and spreading throughout this country and the world.

Third, organized teams using a systematic programmed approach are successfully developing new products in greater numbers.

Fourth, and possibly most important, innovation is progressively increasing at a geometric rate. Ideas breed. They multiply; and as technical communication improves, the rate at which they breed and multiply increases. These forces are all inter-related. They are not independent. They have converged with these results.

First, it is more expensive, more difficult, *more risky* and *less likely* that a company can develop an inherently superior product. Even if a superior product is developed, the length of time during which

it will be superior will be disappointingly brief. This does not mean that a company can afford to commit itself to developing products that are only equal to those of its competitors. It cannot. It must still commit itself to making a strenuous effort to develop superior products. But, this is increasingly difficult.

How can a product that is only equal to competing products be marketed effectively? There are a lot of "gimmicks", such as exaggerated advertising claims, but gimmicks are not a satisfactory long-range answer.

To repeat, marketing success is dependent upon the extent its product helps a customer attain his objectives. But, there is no permanent real difference between products. The products themselves are equally helpful to customers. To get a marketing advantage, some ingredient must be added which will make the product more helpful.

Something more than the product itself must be offered to the customer. Fortunately, the customer isn't really interested in buying a product. *The customer wants to buy a result*. People do not want to buy fertilizer. They do not want to buy insecticides. People want to buy a result. They want to buy a higher yield per acre or they want to buy freedom from pests and insects.

"SHOW AND TEACH"

What can be done to make a product the one most likely to bring about the result customers want? A product doesn't automatically bring about a result. The result depends on how the customer uses the product. The answer is obvious—*Show* the customer how to use the product to give him the result he wants. *Teach* the customer how to use the product as the means to the desired result.

When advising a customer on using a product, it is not only the positive that should be emphasized. The negative needs emphasis too. In addition to setting forth the strengths of a product, its limitations should be given. A customer needs to know how *not* to use a product as well as how to use it.

The company which provides its customers with *unexcelled* advice on using its product to get the result they want, has a marketing advantage that cannot be duplicated.

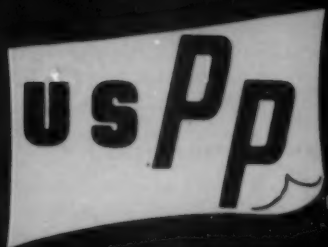
If a company's representatives are the best counselors that its customers can obtain, it offers a plus that its competitors cannot match, even if their products are equally effective.

MARKETING EDUCATION AND COMMUNICATION

A company can do a thorough job of researching its customers and planning its marketing strategy and still fail if it has not equipped its representatives to recognize and take advantage of every situation offering promise of a sale.

People frequently think of marketing in terms of an alert, aggressive salesman "snaring" a new customer. This is only part of the story—the smaller part. Most of today's marketing opportunities do not result from getting new customers.

In business today, most marketing successes will be dependent upon getting additional business from old customers. When is the best opportunity to get



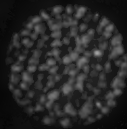
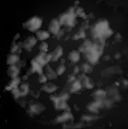
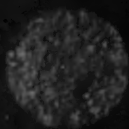
Headquarters for All Phosphates Used in High Analysis Fertilizer

TRIPLE SUPERPHOSPHATE

ROP

COARSE

GRANULAR



For requirements contact our Sales Agent—BRADLEY & BAKER

U.S. *PHOSPHORIC* PRODUCTS

TAMPA, FLORIDA

Division

TENNESSEE



CORPORATION

Principles of Marketing Organization

(Continued)

additional business from an old customer?

The best opportunity to get additional business from an old customer is that moment when he is being given a product or service which he previously purchased. This is one of the reasons that marketing education is crucial. Each employee must be taught to look for the marketing implications in each of the company's activities. It is no longer adequate to efficiently provide a customer with only the product he purchased.

The customer must be made aware of the additional benefits he can obtain from expanded or extended use of the company's products. Increasing this awareness is dependent upon utilizing each and every contact between the customer and the company as an ir retrievable marketing opportunity.

Marketing success does not result from random chance. Attaining marketing success requires *disciplined adherence to a planned program* by the entire company. Taking advantage of the moments of marketing opportunity requires that each and every employee, in all parts of the company, be taught to accept the responsibility to sell the company and its products.

In teaching employees to market their company's products, incentives such as raises and promotions are important—but prompt recognition and praise for marketing achievement are probably more important.

The approach outlined is a striking contrast to the time when only salesmen needed to sell. Generally, it was adequate if the other employees only manufactured, delivered, maintained or serviced the product. This is why the Marketing Education and Communication job is such an important one.

PHILOSOPHICAL CHANGE

A philosophy must be changed. Each individual employee must perform his job in a way that is specifically oriented toward efficiently serving the customer, creating a favorable impression of the company, and increasing the customer's use of the company's products.

The need to have representatives who can counsel customers also makes Marketing Education and Communication an important element of the total marketing job. Permanent marketing strategy cannot be based on a temporary product superiority.

In order to get and keep a lead over competition, a company must make certain that its products are at least equal to those of its competitors and its representatives are superior in counseling customers on using its products to attain their objectives.

Since it cannot permanently guarantee superior products, a company must permanently commit itself to superior personnel. *Superior personnel are the only durable marketing advantage.* Marketing advantage endures only as long as its company's representatives are superior to those of its competitors.

Customers change or are taught to change their wants. Products change and the ways customers must use the product to attain their objectives also change. The need for Marketing Education and Communication of the highest possible quality is not only critical, it is permanent.

ADVERTISING AND PROMOTION

Obtaining maximum marketing effectiveness requires that all marketing activities be synchronized. Advertising and Promotion campaigns usually require a long lead time before a significant awareness can be generated.

Marketing effort must be timed to coincide with the time of greatest advertising and promotion impact. On occasion, Advertising and Promotion and the other elements of marketing can be successfully joined together from separate organizations, but this is risky. It is risky and unnecessary.

If Advertising and Promotion is given direction common with that of the other marketing activities, it is more likely that all phases of marketing will function in harmony and give each other timely support.

SALES

Sales is the next element of marketing. Sales covers all direct phases of identifying, approaching, reaching and selling customers and prospects. All other activities in the company must be designed to support and increase the effectiveness of sales. Market Research studies the customers and prospects and identifies their objectives.

Strategy Planning suggests suitable ways to approach and reach these customers and prospects. Advertising and Promotion heightens the awareness of these customers and prospects to the benefits of the company's products.

Education and Communication teaches and improves marketing skills but it's Sales that must actually execute the marketing program. This is the organization that makes or breaks the marketing effort. Sales personnel are the assault troops of the entire company.

Assuming there has been a modest success at researching the customer; planning the strategy; advertising and promoting the company's services; educating the personnel; and selling the company's products—now comes the time to measure performance and results.

PERFORMANCE MEASUREMENT

The performance of each component and each individual in the company must be measured. Areas of strength and areas of weakness must be identified—*what is and what isn't* working must be determined. To many people measurement is objectionable. It may be objectionable but it's *necessary*. When the objectives were established, a goal was set. Without measurement, progress toward or "slippage" away from that goal cannot be determined. Measurement is required to re-examine the objective, to determine the position, to re-evaluate the course, to sharpen the planning and to improve performance. ▲



One bag broke . . . the other has two-way stretch

The one with stretch is made of H&W's new, high-strength Expanda Kraft.

A large tractor-trailer ran over both bags of equal weight and plies. The regular kraft bag burst under pressure—see the tell-tale flour on the inside tire tread. But look at Expanda Kraft—*not a sign of breakage!*

Expanda Kraft is stronger, because it's made

by a special roll-crepe process. It's resilient, has two-way stretch, and soaks up shock. And Expanda Kraft is available in white, semi-bleached and natural.

Expanda Kraft comes in 40, 50, 60, 70, 80 and 100-pound basis weights. *For samples and information*, write Hollingsworth & Whitney, Division of Scott Paper Company, Chester, Pa.

Safeguard your product in EXPANDA KRAFT®

HOLLINGSWORTH & WHITNEY DIVISION OF



SCOTT PAPER COMPANY

How Monsanto applied Principles of Marketing Organization

The FCMS assignment of John Gillis was to show how Monsanto applied the principles set forth by Eugene Mapel on the preceding pages.

By JOHN L. GILLIS*

"Happily, the Executive Committee of my company—of which I am a member—has made my task relatively easy for me," remarked Gillis. "I must concede that the Executive Committee didn't 'organize for marketing action' entirely for this occasion, but I'm sure that you'll agree that the timing was exceptionally good."

LET's take a look at Monsanto's agricultural chemicals picture as it existed several months ago. Part of our activity in this area was located in the Inorganic Chemicals Division. Primarily, it involved fertilizer ingredients and feed additives.

A second large segment of our agricultural chemicals operation was in the Organic Chemicals Division.

For the most part, this group handled insecticides and herbicides. Of growing importance was a group of feed additives—*MHA* and *Santoquin*, an antioxidant.

As you will readily see, these farm chemicals not only were made and sold by two separate operating divisions, but their handling was widely scattered even in those. And in Monsanto, the divisions are very like independent companies that perform all their own operations from research to post-sale technical service.

The individuals and groups handling our farm

chemicals were pretty well scattered. However, both divisions had found that these products differed so basically from their others, such as industrial and fine chemicals, that both had segregated them to a large extent. This was particularly true in sales organization.

HOW THE SITUATION DEVELOPED

Let me emphasize here that this state of affairs did not develop overnight, nor was it the result of whimsy or indifference. It evolved quite logically, when viewed from the standpoint of the chemist. By and large, chemical fertilizers are inorganic compounds based on the primary plant nutrients—nitrogen, phosphorus and potassium.

Monsanto is a major producer of synthetic ammonia, the most convenient starting point for a host of nitrogen compounds. Furthermore, the company has for years been the world's largest producer of elemental phosphorus, which in turn points to the production of phosphoric acid.

Farmers needed and demanded nitrogen and phosphorus to fertilize their depleted soil; Monsanto's Inorganic Chemicals Division supplied it.

Most modern pesticides, on the other hand, are based on organic chemistry. Monsanto's organic chemists, like those of other companies, had come up with some compounds that proved to be highly effective as pesticides. These didn't resemble the inorganic fertilizers; they were manufactured by entirely different processes; their applications were not the same.

The new organic compounds proved profitable to both Monsanto and to the farmers who bought them.

* Vice President, Marketing, Monsanto Chemical Company. Presented at the Second Annual Farm Chemicals Marketing Seminar, November 15, 1960, New York City



*MULTIWALL BAGS OUT-PERFORM CONVENTIONAL KRAFT IN THE 3 TOUGHEST TESTS IN PACKAGING TODAY!



1 In Handling And In Transit!

Multiwall and baler bags made of new CLUPAK extensible paper withstand the strain and impact that cause conventional bags to rip, split or tear. This increased toughness allows multiwall and baler bag users to increase package strength yet decrease the number of plies with resulting economies. The next time you order, say CLUPAK before you say paper and see how it out-performs your present packaging material.



2 In The Warehouse!

Stack them high! Multiwalls and baler bags made of CLUPAK extensible paper hold greater loads, take greater strains, stack compactly and safely even with lower basis weight paper. The stretch and "give" built into CLUPAK extensible paper withstands punishment that often rips, splits and tears conventional kraft. Bags with the trademark CLUPAK warehouse faster—without "kid glove" treatment.



3 On The Filling Line!

Here, where multiwalls get their first and often most rigorous test, particularly on high speed filling and packaging equipment, CLUPAK extensible paper multiwalls are unexcelled! Their high energy absorption reduces breakage, helps maintain uninterrupted production schedules, cuts product waste and repackaging costs. Plan a trial shipment of multiwalls made of CLUPAK extensible paper!

Prior to CLUPAK extensible paper, there were no controlled standards of toughness in the paper industry. Clupak, Inc., is proud to have established these standards and permits the use of its trademark only on paper which meets these rigid toughness requirements.

Ask your salesman about this revolutionary new material... prove to yourself that multiwall bags made of CLUPAK extensible paper give you...

GREATER STRENGTH WITH LOWER TOTAL BASIS WEIGHT



*Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. Clupak, Inc., 530 5th Ave., N. Y. 36, N. Y.

MARKETING

How Monsanto

applies

PRINCIPLES OF MARKETING ORGANIZATION

(Continued)

Monsanto was in business to make a profit—and, if I may, I should like to note here that the company still holds to that worthy goal. And so the Organic Chemicals Division found itself in the agricultural chemicals business, too.

Compounding the complexity of the situation, as stated before, was the wholly bewildering agricultural chemicals market.

"DISORDER OUT OF CHAOS"

In past years, I have discussed publicly the agricultural chemicals market and have placed some emphasis upon its peculiarities. Perhaps a little facetiously, I titled one of the talks, "Disorder out of Chaos." Somewhat later, the theme changed to "Confusion out of Chaos—A Progress Report." During the three intervening years, as I saw it, the chaotic farm market had not quite progressed to mere disorder, but had at least advanced to the milepost of confusion. There are indications that the market has come along a little further since that 1958 observation, but allow me to come back to that.

Chaotic, disordered, or merely confusing, it has always posed a very real problem for those who would sell their products there.

CONSULTANT HELPED MONSANTO

Monsanto's Executive Committee considered this market, as well as the company's own efforts to serve it, on the frequent occasions when the matter was taken up. Indeed, we even discussed the desirability of remaining in the field, and decided definitely that we would. To augment its own findings, the committee last year commissioned an expert consultant to conduct a complete, detailed study of the entire field as it applied to Monsanto.

We could see this market as one in transition. It still is, of course. Our farms are growing larger in size and smaller in number. The successful farmer or farm manager operates more and more as a businessman, rather than the fondly remembered tiller of the soil. Scientific agriculture is his forte, and it exploits the advances of science. Yet small-scale farmers are still with us, and not all large-scale ones operate in the same manner.

Differences in geographical location, growing seasons, prevalence of pests, types of crops and a number of other factors cloud the issue. It is not as if thousands of food factories—all very much alike—dotted the country and employed purchasing agents on whom to call. Often, in fact, it seems as if *no* two farms or farmers resemble each other to any great extent.

The haphazard sort of marketing system which serves the farmer may be an offshoot of these things. There really can be no clear picture of it—the image is invariably out of focus in spots, is over- or underexposed in others, and it frequently is marred by the blur of rapid movement.

Sales and distribution lines are seldom clearly drawn, and over-intense, damaging competition often is the end result.

How could Monsanto, then, best market the agricultural chemicals it had developed? How could it best serve the farmer, and as a result best serve itself, in the face of such a difficult situation?

Our consultant studied this problem for almost nine months, drawing heavily on the experience and information of our own people, evaluating our position in comparison with our competitors, and confirmed what many of us thought was the proper course of action:

Monsanto should consolidate the agricultural chemicals operations of the Organic and Inorganic divisions into a single, fully integrated Agricultural Chemicals Division. It would have its own research and manufacturing facilities and would market the entire line of Monsanto farm chemicals. On September 1st—two and a half months ago—this was done.

The committee had considered, and the study had pointed out, some possible alternatives. One would have consolidated the whole agricultural chemical program into one of the existing divisions; a second would have established a separate sales division for agricultural products; and a third would have set up a separate sales, research and development division without manufacturing facilities.

Curiously enough, each of these possibilities had certain advantages that could not be dismissed lightly. They were rejected because they would have failed to achieve some of our prime objectives. Each would increase management problems and would allow divided responsibility to continue to exist. Performance would be difficult to assess, and maximum sales and profits would not be attained.

Despite their differences in composition and in end use, the two groups of Monsanto farm chemicals were found to have so much in common that only a single operating division with its own research, development, manufacturing and marketing facilities could achieve the greatest possible success.

The area which drew the greatest attention, which was scrutinized most closely, and which in the final analysis gained most from the formation of the new Agricultural Chemicals Division, was that of marketing.

"SAME MAN—NOT SAME CUSTOMER"

Where did we, as marketing people, gain so much by the change? In the first place, Monsanto has for some years been a marketing-minded company. We like to think that all of us—from the man behind the laboratory bench to the one who fills out the order—always keep the customer and his needs in mind. In order to keep him in mind, we also must study constantly that market of which he is a part. The farmer who buys our Lion E-2 fertilizer isn't the one who buys a fly-rod made with our chemical intermediates or who takes our aspirin for his headache.

He may be the same man, but he's not the same customer.

Now, from a single vantage point, we can look

The Big Factory



It's no Willow Run, Boeing plant, or Big Steel assembly. No stacks smoke, no whistles blow, and no shifts swarm in and out. . . . The factory is the nearly half square mile of rich Midwest land—the more than 13,000,000 sq. ft. in the 300 acres or more average farm of the SUCCESSFUL FARMING subscriber.

The average SF farm has eleven buildings; house, barn, sheds, cribs, and silo. It is divided into fields, pastures, feed lots and yard. Plant maintenance is constant, with big expenditures to keep up soil fertility through use of commercial fertilizers, and livestock health, growth and productivity with farm chemicals.

SUCCESSFUL FARMING readers have well above average intelligence, business investment, and incomes. For more than

a decade, SF farmers' annual cash farm income has been about 70% higher than the annual U.S. farm average.

There's little waste—about 9 out of 10 SF families own or operate a farm. Your farm chemical advertising message reaches active users, in a medium which constantly reports profitable applications in case histories and illustrations.

SUCCESSFUL FARMING is flexible . . . offers a variety of choices to fit every sales and merchandising need—the National Edition with over 1,300,000 circulation for massive impact, and the State & Regional Editions for intense cultivation of specific markets, copy testing, selective and seasonal selling, additional dealer support and new product introduction.

Combining *influence* and prestige, based on 58 years of service, SUCCESSFUL FARMING opens doors and purses, sells any good product which increases yields, ups productivity, betters farm business!

Call nearest SF office for full facts.



MEREDITH PUBLISHING COMPANY, Des Moines . . . with offices in New York, Chicago, Atlanta, Boston, Cleveland, Detroit, Los Angeles, Minneapolis, Philadelphia, St. Louis, and San Francisco.

MARKETING

How Monsanto

applies

Principles
of
Marketing
Organization

(continued)

directly at the farmer as a man who needs our fertilizers, pesticides and feed additives for his fields, crops and animals. The new division's Marketing Department can concentrate on serving him and his suppliers in that light. Product planning can be based on a broader foundation. *Sales offices, warehouses and shipping facilities can be operated more efficiently.*

Our salesmen can cover the market more adequately and with a broad line of products. We are in a position to establish even more firmly the name of Monsanto as a basic producer of farm chemicals.

It may be well here to point out how the new division is organized with respect to its former "shared" status.

The specific task of marketing Monsanto farm chemicals now falls to the Marketing Department. Its director reports to the division general manager. It is very like the marketing segments of our other divisions. Primarily, its job can be classified as selling, but such marketing services as advertising, sales promotion, market research and technical service also are its responsibility.

Under the Monsanto concept, each of these is considered a direct, in-line function of the over-all marketing effort.

STAFFING THE NEW DIVISION

Staffing the new division, as you can imagine, was a major undertaking. It required very careful planning and a great deal of insight into the abilities, aptitudes and attitudes of people throughout the company. In some cases, it meant cross-country moves; in others, it simply meant reporting to the same desk for a different job. Salesmen in each chemical field had to be trained in the technical aspects of the other. Not all of those assigned to the new division came from the two in which agricultural chemicals had formerly been concentrated, either. All the other divisions eventually were involved in the rather complex interchange of personnel.

We have been pleased by the high caliber of men who were tapped—all from inside Monsanto—to form the division's top management team. Its general manager, Tom Smith, is a marketing-minded man with a solid background of sales and administration. He joined the company 20 years ago as a salesman, became director of marketing for the Inorganic division in 1952, and since 1957, had served as the division's assistant general manager. Paul Ekberg, another very able executive, heads up the key Marketing Department. He is a chemical engineer who has served in production, sales and technical capacities with Monsanto since 1940. He became the Organic division's product director of agricultural chemicals last year after being the division's assistant director of sales.

Suffice it to say that others across this top line are equally well qualified to fill their posts.

One problem that the new management had to

solve soon after the new division was formed was that of retraining the field representatives. This was started last month. Regional meetings were called at San Francisco, El Dorado, Ark., and St. Louis. At each of them, a "faculty" of former Inorganic division technical service men and product managers explained their chemicals to former Organic division salesmen, and vice versa. Both technical and marketing differences were covered. Following these training sessions, pairs of salesmen took the field, each man traveling with one who previously sold the products of the other division. We believe that these two moves gave us a start on a training program which, of necessity, must be a continuing one.

"WHAT HAVE WE DONE?"

Looking back on the reorganization, with all its planning, its personal and professional relations aspects, its reams of paper work and its not inconsequential expense, we can ask ourselves some questions in all fairness: What, exactly, have we done? What is this new division, which by its formation created two new vice presidents and by its nature upgraded dozens of other men in Monsanto?

First, from the company standpoint—and particularly from that of a marketing man—here we have a "profit center," an entire operating division organized specifically to better serve a single market. As such, it may well act as a prototype for other divisions in the years ahead. Whether other major markets will lend themselves to such treatment is a matter that is certain to be studied carefully in designing for Monsanto's future growth.

More than that, I think, the move we made September 1st is proof of Monsanto's confidence in the agricultural chemical market as one that is growing and is likely to become more profitable for those who approach it correctly. The move reaffirms the company's belief in the great importance of the farmer.

The profit motive, we maintain, is the fairest and most productive of all. I believe that I have intimated as much. Nevertheless, it is good to know that our agricultural chemical scientists, technicians, engineers, and—yes, our *salesmen*, are going to be among those who, in the years ahead, will be helping the farmer feed and clothe the teeming throngs that the so-called population explosion is to bring.

Discovering new agricultural chemicals will not be enough. Designing plants and making the products will not be enough. Only when they have been channeled into the farmer's hands and he has been shown how to use them to good advantage will the agricultural chemicals of the future do the job for which they will be vitally needed. *Our job is going to be to get them there and show him how.*

And in those times of quiet reflection which we are seldom allowed and even more seldom mention in public, I think that all of us here can feel humble pride in knowing that, without the products we sell, life even today would be quite austere. Short years from now, these products and their successors will literally be the difference between life and death for thousands—even millions—of people. That, ultimately, is the challenge that we must meet. ▲

How Union-Camp's 5-Star Plan saved multiwall user up to \$450 per carload of bags

This is a new kind of "Big-Inch" story.

A major mid-west packer* wasn't convinced his multiwall bagging operation was all it might be. Could Union-Camp's 5-Star Multiwall Plan help?

To get the answer, Union-Camp multiwall specialists visited the plant. They found that the automatically filled bags occasionally stuck in the sewing head. Also, that the sewing line tended to "belly" and form an arc pattern. The result was considerable loss in production and frequent breakage. Another problem—the bags didn't warehouse well.

"Sew-Straight" Solution

After completing their analysis, the Union-Camp men suggested installing a "Sew-Straight" attachment right onto the sewing head. The bags could now be closed with an "E" head in a perfectly straight line. And only 1 inch from the top of the bag. That single inch made all the difference.

Less paper—less breakage

To begin with, shorter bags could be used. The savings in paper alone cut

the firm's multiwall costs from between \$350 to \$450 a carload. Imagine the savings based on several dozen carloads a year!



Before and After. Old, semi-circular closure pattern (left) and the new closure (arrow). Note the straight sewing line, and how close it is to the top of the bag.

The new attachment also speeded production by eliminating sewing head jam-ups. Moreover, since the top closure is now identical to the factory-sewn bottom closure, the bags form a perfect pillow shape—no awkward ears. This makes them easier to handle . . . easier to stack. And there's less breakage and fewer rejects.

How much could you save?

Perhaps an idea unearthed through Union-Camp's 5-Star Plan could save you money. The chances are excellent. For every day, multiwall users, large and small, are reducing their multiwall costs by capitalizing on this comprehensive packaging service. Their savings run from a few thousand dollars to over \$100,000 a year.

Apart from bag construction, this economy program covers bag design, specifications control, packaging machinery, and a survey of your materials handling operation. And it costs you nothing—regardless of the brand of bags you now use.

FREE 16-PAGE BOOKLET

Write Dept. M-3 today for a free copy of Union-Camp's new 5-Star Plan booklet. It describes many case histories showing how packers like yourself have achieved greater efficiency and economy in their multiwall operation.

UNION-CAMP
MULTIWALL BAGS
Union Bag-Camp Paper Corporation, 233 Broadway, N.Y. 7, N.Y.

* NAME ON REQUEST



Joe Sharp, Spencer



D. E. Sedlack, USS

Raw material users and producers exchange viewpoints during the second day's activities at the Fertilizer Industry Round Table. In the spotlight . . .

STANDARDIZATION OF RAW M

STANDARDIZATION of raw materials took over the spotlight during the second day's activities of the Fertilizer Industry Roundtable at the Mayflower in Washington, Nov. 2-4. Panels representing the raw materials producers were given the opportunity to present their views on how they can and are contributing to greater uniformity of product.

H. L. Marshall, Olin Mathieson, moderated the session and discussed "Why Uniformity?" He stated that all fertilizer manufacturers try to conform with the standards set up, but varying situations such as mixing a varied trainload into a limited storage building may run analysis too low. Terminology is another area of confusion in that the same product may be reported in various ways depending upon where the product originates.

NEED FOR UNIFORMITY REPORTED

An independent report on uniformity was conducted which resulted in a firm realization that standardization of raw materials and uniformity in nomenclature to completely describe processed raw materials was sorely needed.

Terminology discrepancies were not confined only to the raw materials used, but also in describing screen sizes of sieves.

Wayne King, W. S. Tyler Company, brought to the attention of those present the adoption of U. S. standard sieves by the ASTM and the National Bureau of Standards. Terminology had been used prior to this adoption in describing screen sizes of sieves which he said should have been uniform but in fact were not.

Rodger Smith, Eastern States Farmers Exchange, leader of the users' panel emphasized that while control was being exercised throughout the industry, continuity was lacking, and this is strongly desired by the farmer and control officials.

The state control officials were the guardians of the farmer, said Smith. It is their job to uphold the law regarding guaranteed analysis of fertilizers.

ANALYSIS CONTROL

The major problems of analysis control according to Smith were broken down as follows:

- 1) Lack of uniformity of ingredients.
- 2) Lack of information on ingredients.
- 3) Ammoniation practices.
- 4) Segregation of ingredients in the mix.
- 5) Operating errors.

The chief causes of the first two problems, said Smith, were undue averaging on the part of the manufacturer; financial loss on ingredients; calculating too high on ingredients; necessity for undue overages and the inability to match particle size (between shipments, carloads and manufacturers). A less uniform product is the result both chemically and physically.

Edward Kingsbury, Kingsbury & Co., Indianapolis, Ind., stated that before standardization of materials could be discussed, it must be ascertained what products are most advantageous—taking into consideration all the facets of production, costs and the distribution of plant food within the product.

"We must justify our selections of materials, and then we recommend changes," he added.

In producing low nitrogen grades the choice of



H. L. Marshall, OM



Bert Tucker, Sohio



Users panel included E. D. Kingsbury, Grayson Morris and Gus Mautner, facing camera. With backs to camera are E. A. Reichard and W. B. Jones. At the podium is Rodger Smith, leader of the panel.



W. Harwood, International Minerals, and K. B. Henry, National Dust Control.

V MATERIALS

Around table are D. Warren, Omega Machine, Div. of B-I-F; W. Law, Minneapolis-Honeywell; W. Strauss, Foxboro; A. Simmons, Fischer and Porter.



particle size becomes somewhat critical. Using granular or coarse (which separates to a lesser degree) potash separation is aggravated in the screen ranges with respect to phosphate and potash. He said to minimize this deficiency when using granular potash the end product should be screened at $-4 + 14$ and with coarse potash at approximately $-6 + 16$.

Kingsbury said that with the advent of the O. K. Sparger (O'Neill-Kingsbury), greater flexibility in formulation was obtained. By merely turning valves they can effect a difference in plasticity equivalent to 200 lbs. of water per ton. Three pipes under the bed and two on top have replaced the conventional TVA design. Potentiometer readings taken at many locations under the bed indicate good distribution of the liquid phase, especially with regard to minimizing temperatures throughout the complete mass. This new sparger, as you would expect, has allowed us to decrease the particle size of the potash used, if so desired, Kingsbury reported.

SUGGESTS MORE DUST-FREE POTASH

Kingsbury suggests that more dust free standard grade potash be considered with specifications approximating 5% 10-16, 10% 16-20, 75% 20-32 and 10% 32.

It is felt that ROP triple produced today needs to be improved. It was suggested that the producers remove the very fine particles just prior to loading. Standardization of triple specifications between producers is lacking and could be improved. Examples were cited to indicate a lack of uniformity between producers, said Kingsbury.

He felt that if the water content could be held to 18%, phosphoric acid would be very satisfactory material; however, below this is desirable in some ratios. High water content of wet process phosphoric acid (30%) proved satisfactory in a 1-1-4 ratio but did not lend itself to 1-1-1 ratios.

ELIMINATE OBSOLETE COMBINATIONS

"More standardization with respect to solutions is warranted, and many obsolete combinations should be eliminated. However all of us are on the alert for better combinations of ammonia, nitrate, urea and water, and new solutions that are superior to former combinations should not be sacrificed for the sake of standardization," he said. (He assumed that reference to standardizing solutions pertains to the number of solutions rather than to the specifications between suppliers offering the same solution.)

Others on the user panel commented similarly: Gus Mautner, Baugh & Sons, Baltimore, said that the suppliers should accompany shipments with proper information to facilitate production; he thought that it would be advantageous if the analysis of each carload were designated. Grayson Morris, Southern States, added that it was his feeling that selective sampling would resolve the problem of materials that continually violate the code of standardization.

STORING PHOSPHORIC ACID

Eugene Reichard, who is in the liquid fertilizer business, stated he found the cone bottom vertical tanks best suited for phosphoric acid storage. He also

PRODUCTION METHODS

STANDARDIZATION OF RAW MATERIALS

(Continued)

stated that the lack of uniformity in superphosphate created serious problems in his operation.

W. E. Jones, Northwest Cooperative Mills, said that production people do not have a rule of standardization to go by; they cannot be sure of specific material, equipment, etc. in their operation. He went on to say that uniformity in language and terminology is sorely needed; specifications are most looked for in order to know how to handle the material received.

The producers' panel had an opportunity for rebuttal beginning with the liquid nitrogen producers. Bert Tucker, Sohio Chemical, Lima, Ohio, told those present that standardization of nomenclature was reasonably attainable. He thought, however, that physical properties could use some improvement. With improved technology, he added, it is likely that the number of N solutions will be reduced as in the dry grades.

Joe Sharp, Spencer Chemical Co., Kansas City, mentioned that the NPFI had initiated a committee to do work on the standardization of materials and that Spencer was cooperating to maintain uniformity in product. Charles Waters, Nitrogen Div., Allied Chemical and D. F. Sedlack, U. S. Steel Corp., defended the cause of the solid nitrogen producer. They presented a case similar to the liquid group in their desire to improve methods of technology and communication.

PANEL VIEWS PHOSPHATES

E. F. Carnell, Davison Chemical Company; H. P. Tatum, U. S. Phosphoric Products Co.; D. O. Walstadt, American Cyanamid Co.; W. W. Harwood, IMCC; R. L. Jones, Armour Fertilizer Co.; Thomas Pierce, Swift & Co. were all members of the panel that presented their views on superphosphate, triple superphosphate, ammonium phosphates and phosphoric acid.

Carnell agreed that there is a need for standardization in phosphates, but these should depend upon the manufacturers' needs.

Thomas Pierce remarked that a uniform source of supply was desired; however Mother Nature was uncooperative. He brought out that pile structure, handling and loading all aggravated the problem of uniformity.

Mr. Harwood mentioned that there are many variables that must be exactly controlled to ship a standardized product. Many are prohibitive, said Harwood, such as costs and physical limitations.

In a discussion of ROP superphosphate R. L. Jones said that there are two problems: the day-to-day variety and the seasonal variety. Storage limits production, and production variables are unavoidable. He added that moisture varies in the product with the time of shipment and position in the pile.

Daniel Walstadt described the process used by

American Cyanamid in the production of triple superphosphate. He described the various methods and equipment used to insure product uniformity.

DIAMMONIUM PHOSPHATES

H. B. Tatum's discussion dealt with diammonium phosphates. Several questions were presented to the Roundtable such as: What happens to the N-P grade if it is subjected to high temperatures? Is it stable? Will it melt? Does it remain hard on cooling? Is the normally high water solubility affected? What is the effect of high moisture? How much NITROGEN is lost?

Tatum had this to say: Chemical and physical studies of modified diammonium phosphates have been made in the laboratory and in the various types of mixed-goods plants. In thermal stability experiments the results indicate that a modified diammonium phosphate with low moisture is relatively stable at temperatures up to 275° F—retaining most of its nitrogen at this temperature, even with an extended exposure time.

The object was to determine the thermal decomposition characteristics of the N-P grade at elevated temperatures for periods of time coincident with those encountered in the manufacture of mixed fertilizers.

On a slide the temperature in degrees F was plotted against loss of nitrogen in pounds of nitrogen per ton of N-P grade. The red curve indicated a relatively small loss of N at normal ammoniator operating temperature. At 300° F. the loss is in the range of 4 pounds of nitrogen per ton of modified diammonium. The exposure time was 30 minutes which should be ample for a particle to travel through the ammoniator and dryer. Initial moisture content was 1.25%, said Tatum.

In batch, semi-granular operations wherein sulfuric acid is used, the temperature is expected to rise higher with low initial moisture in the mix. The fully-integrated plant operation presents the opposite picture—higher moistures in the ammoniator coupled with air swept beds lower the temperature. These compensating conditions in each type of plant hold dissociated nitrogen losses to a minimum, and for all practical purposes a minimum of 99.5% of the original nitrogen in the N-P grade is retained in the mixed goods, he added.

In conclusion, Tatum calculated a practical problem from the moisture and temperature graphs—should a formula contain 550 pounds of modified diammonium phosphate per ton of mixed goods at a mixing temperature of 230° F and at 10% moisture it would require an excess ammonia absorption capacity of approximately 1.3 pounds. Should the temperature be increased to 300° F, which is considered beyond the scope of good standard operating procedure, the dissociation could amount to 1.5 pounds of free ammonia. The absorption of 1.5 pounds of free ammonia requires slightly less than 5 pounds of 66° Baume sulfuric acid.

A general rule may be established—for every 100 pounds of modified diammonium phosphate used in a formula add one (1) additional pound of sulfuric acid.

Potash producers were given equal time to state their case and to show cause for some of the problems encountered in the production of potash.

Representing the potash industry were: E. Kapusta, U. S. Borax; N. T. Wendt, American Potash & Chemical; D. J. Bojrne, Duval Sulphur & Potash Co.; Bob Heck, International Minerals & Chemical Corp.; Dean R. Gidney, Potash Company of America; and Van Rogers, Southwest Potash Company.

Ed Kapusta, the panel leader, led off the discussion by stating that all raw materials producers were eager to abide with the reasonable demands of the manufacturers who use their material. Ed described in some detail the process that U. S. Borax used in producing their product.

Nelson Wendt of APC described the methods used in their operation at Trona, Calif., mentioning that with a completely controlled operation they were able to overcome many problems in production and improve product quality.

D. J. Bojrne of Duval discussed the flotation process used for the recovery of potash. He said that the variations that exist in shipping, i.e. day-to-day, car-to-car, and the seasonal aspect of the business, raise havoc with the material in storage resulting in difficulties in analysis.

Bob Heck, International Minerals & Chemicals, accompanied his presentation with color slides that described the specifications of potash produced by IM&CC.

High analysis fertilizers, developed since the war, encouraged the development of granular material said Dean Gidney of PCA. Gidney mentioned that it was his suggestion that some standardization of nomenclature be developed as a result of the round-table discussions.

Van Rogers, Southwest Potash, completed the panels' remarks by saying that potash producers have attempted to conform with the wishes of the manufacturers to produce the material most requested in such areas as analysis, size, etc.

INSTRUMENTATION DISCUSSED

Communication problems in instrumentation were discussed by the use of case histories and new developments. Al Simmons of Fischer & Porter Co. described the system of the magnetic flowmeter and its application to the fertilizer industry. With his presentation, slides were used to show schematically the installation, operation and maintenance of the flowmeter.

W. Strauss, Foxboro Company, brought out the advantages of automatic control versus the manual methods that had been used previously. With the advances in technology and the constant demands on the suppliers for a more uniform product, automatic and constant control on production is the only solution.

Don Warren of Omega Manufacturing Co., told the group that the variable-speed belt feeders had many advantages to offer in calibrating the flow of material. He said that there were two ways to use the belt with regard to the flow of material. The better of the two methods suggests that a constant load per foot of belt be carried and only change the rate by altering

the speed of the belt. He added that equipment of this type should be installed in areas of little vibration.

William Law of Minneapolis-Honeywell discussed temperature and moisture control in the production of high analysis fertilizers. He said that under such modern manufacturing techniques that exist in the fertilizer industry the exercise of perfect control is absolutely necessary.

Frank Neilsson of IM&CC substituted for Jim Archer and gave the presentation on automatic sampling. In the discussion which was accompanied by slides, Neilsson described the various sampling tubes and riffles used and the many techniques employed in the process of taking the samples.

Ed Glocker, W. R. Grace, explained how to determine by statistical evaluation, nitrogen losses in drying of fertilizer. In brief, he reported on studies and results that have been made and the methods used to determine them. (August issue of FARM CHEMICALS, page 56, discusses in full the Magruder Check Sampling technique used to help control product losses.)

PRENEUTRALIZATION PANEL

Last year preneutralization got a big play; in continuing the discussion as a result of the interest shown last year, another panel of experts was brought together to present their views. This panel included such people as: Grant Marburger, Spencer Chemical; George Gilliam, Nitrogen Div., Allied Chemical; Harold Garrett, Minute Maid; R. D. Young, T. V. A.; and N. K. Alfrey, W. R. Grace.

Farm Fertilizer's operation in Omaha was described by Marburger and slides were shown to display the unit in the plant. He showed where the spargers were positioned in the tank and described the flow of acid and liquid nitrogen into the tank. The preneutralized product was then routed to the ammoniator-granulator. He added that this unit at Farm Fertilizer, Inc., has already produced about 10,000 tons during two years it has been operating.

Gilliam of Nitrogen Div., talked about start up of the preneutralizer. He said the spargers should be covered with water, with the acid and nitrogen introduced into the tank slowly and simultaneously. Temperature is a very critical variable since it determines the amount of water to be used.

Minute Maids' Mr. Garrett outlined their experiences in use of the preneutralizer for making a 14-0-7 product for their citrus groves. With an opened top unit, fuming caused corrosion and the motor of the agitator had to be moved from center to the side.

R. D. Young of T.V.A. said there were a number of advantages to be had with a Preneutralizer. One-half to two-thirds of the water is eliminated and half the heat is liberated before the material enters the ammoniator; there is economy of production; production of higher nitrogen grades; and it is excellent for certain grades.

N. K. Alfrey talked of the improvements that had been made in the installation at W. R. Grace, allowing for reduced fuming and less nitrogen loss.

The 1961 meeting will again be held at the Mayflower Hotel in Washington, D. C. on November 8-10. ▲

Sell ENUF!

"sales snatcher" has appeal

SELL "ENUF" Nitrogen solutions to produce higher yields! Here's a theme which has become famous with dealers who started out introducing Nitrogen Solutions at low levels of use and then suddenly "woke up" one day.

They hadn't been taking advantage of their opportunity to increase sales by selling their customers at optimum levels of nitrogen!

A specific example of this took place in Western Nebraska. An Arcadian dealer introduced Uran and Nitrana solutions four years ago—and as in many other cases, encouraged farmers to "try a token application of say, 40 to 60 pounds per acre." Response to this level was good on the initial application

and there was a tendency for farmers to continue using this same rate in the following years.

However, two years ago this dealer realized that in order to build volume, it would be necessary for him to sell his present customers on higher levels of application.

Thus began the Sell "ENUF" Nitrogen Solutions program. Since that time he has succeeded in selling many of his old customers at levels of 100 pounds of actual Nitrogen per acre. In fact, he has several progressive farmers using amounts in excess of 200 pounds per acre and is including test strips of 300 pounds actual Nitrogen per acre in local demonstration work.

It is this approach to the principle of sell "ENUF"



Howard Lathrope, field agronomist for Allied Chemical's Nitrogen Div., tells fertilizer solutions salesmen and customers the importance of selling a balanced program.

Go IMC's DIRECT LINE...

fastest route to superior fertilizer ingredients

Picture this: You're a fertilizer ingredient buyer. Your busy season's ahead. You begin the routine . . . check the list of suppliers, schedule calls, hope for fewest conflicts. The parade begins. One salesman after another — all with products that claim basic specs . . . then your own lab evaluations, shipping dates, inventory control, handling and rehandling. And all the time you hope no one on the long list drops the ball. It's worry season for you.

Change the scene: IMC's salesman has the answer — a full line of fertilizer products. And all quality-controlled from mine to you. Want Super? It's on

track — coarse, granular, run-of-pile. Potash? Which form — muriate, sulphate . . . sulphate with magnesium? Phosphate rock the way you want it . . . the grade and grind you need. And add phosphoric fertilizer solutions too.

Above all, the consistent, dependable service and quality of IMC products result in superior fertilizer ingredients that add to the effectiveness of your finished formulas . . . their selling appeal on the farm.

Next time it's your "worry season," give the go signal to your IMC salesman. He'll help keep you on track.



Lathrope tells his audience that just as you have to lay a dozen eggs if you want to hatch a dozen chicks—you've got to use enough N if you want to get those extra yields.



Nitrogen Division's LeRoy Hetler had three slide projectors in operation during the showing at the solutions meeting.

that is being emphasized by Nitrogen Division, Allied Chemical Company, thus providing potent ammunition for salesmen.

It was featured at the National Fertilizer Solutions Association convention in Memphis November 9-11.

The sales plan is built around a series of 102 color slides, backed up by a terrific sales message.

Several techniques were used to put the "Sell ENUF" point across. First, the 18-minute slide series was shown with the use of three slide projectors, controlled by a single operator and was keyed to a tape-recorded message.

Nitrogen Division representatives wore buttons labeled "SELL ENUF ARCADIAN" and gummed

labels with the same message were applied to glasses at a hospitality hour.

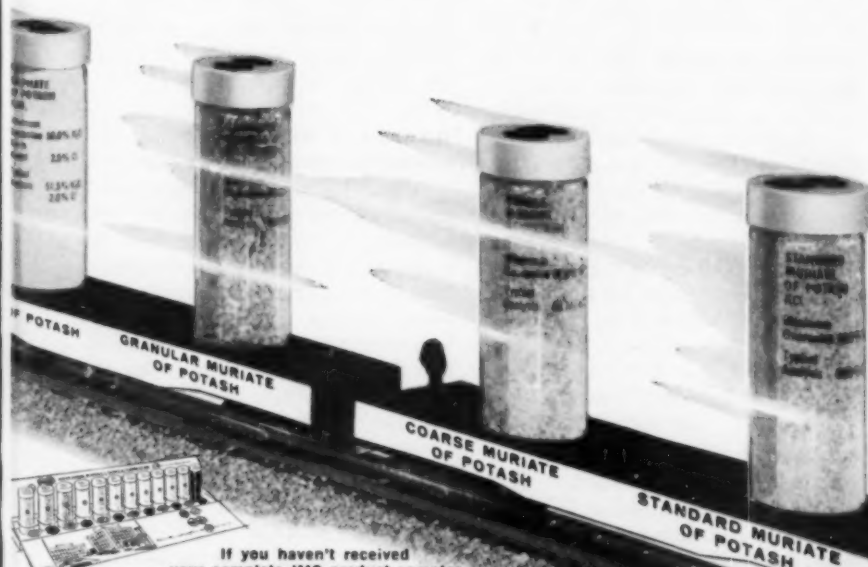
Cartoon posters on the walls of the conference room continued to drive the theme home.

Each cartoon displayed on the conference room walls was used at some point in the slide series. Purpose of the cartoon was to depict the various motives which should be appealed to in selling "ENUF."

Outside the conference room, an animated display which described the production of agricultural nitrogen in simplified form, greeted visitors.

Like the Nebraska dealer who originally got the whole thing rolling, any dealer can now put on his own show and insure a brighter future for his sales program. ▲

ON TRACK WITH THE ANSWERS TO ONE-SOURCE PRODUCT SUPPLY



- Standard Muriate of Potash
- Coarse Muriate of Potash
- Sulphate of Potash
- Granular Muriate of Potash
- SUL-PO-MAG®
- Phosphate Rock, 75/74% BPL Run-of-Mine Unground
- Phosphate Rock, 68/66% BPL Run-of-Mine Unground
- Phosphate Rock, Run-of-Mine Ground
- Triple Superphosphate, Run-of-Pile
- Triple Superphosphate, Coarse
- Triple Superphosphate, Granular
- Phosphatic Fertilizer Solution

FO-4-01

If you haven't received your complete IMC product sampler — or it has been lost or damaged — ask your IMC salesman for a replacement kit. It's attractively packaged to show your customers the variety of ingredients your finished goods contain.

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

ADMINISTRATIVE CENTER, OLD RICHARD ROAD, SKOKIE, ILLINOIS, YONKERTOWN 6-0000



NEWS OF THE INDUSTRY

ROHM & HAAS STARTS CONSTRUCTION IN KY.

Rohm and Haas Co. has announced the beginning of a one-year \$12 million construction program at its recently-acquired plant at Louisville. The estimate of cost is \$2 million more than the firm indicated it would spend when it purchased the government-surplus butadiene plant.

It will produce materials for use in the manufacture of acrylics, plastics, paint compounds, agricultural fertilizers and other commodities.

5% STOCK DIVIDEND ANNOUNCED BY STEPAN

Directors of Stepan Chemical Co. have declared a 5 per cent stock dividend payable December 29 to holders of record December 15. In each of the past two years the company paid dividends of 4 per cent.

Stepan reported nine months earnings of \$1.34 a share, more than 48 per cent above the 91 cents earned in the same period last year.

FOREMAN ELECTED PRESIDENT OF ARC

W. L. Foreman, public relations manager of the National Cotton Council, was elected president of the Agricultural Relations Council, a national organization of public relations men in the agricultural field.

Lyle Liggett, American National Cattlemen's Association, is the new vice president and H. K. Luttinger, New Holland Machine Co., is secretary-treasurer.

IOWA FARMS GROW BIGGER BUT 12% FEWER

The number of Iowa farms of more than ten acres has declined by 12.4 per cent since 1950, Eber Eldridge, Iowa State University economist, recently stated. This means that one out of every eight Iowa farm operators has quit farming. His report was based on an analysis of preliminary 1960 census figures.

Examination by five-year periods indicates that the speed of change seems to be picking up momentum. From 1945 to 1950, the rate of decrease was 2.8 per cent per year;

from 1950 to 1955, there was a 5 per cent decrease, and from 1955 to 1960, there was a 9.4 decrease.

DIXIE FERTILIZER CONTROLS GUANO SUPPLY

In a recent transaction involving over a million dollars, the Dixie Fertilizer Co., Inc. purchased the International Guano Co. and its large deposit of bat guano in caves of the Big Bend country of Southwest Texas. The deposit was found by accident last year and is the only major discovery of guano in years.

It will be sent to the Dixie plant in Meridian, Miss. for packaging and marketing after milling in Texas.

IMC SINKS SHAFTS AT POTASH MINE

T. M. Ware, president of International Minerals and Chemical Corp., stated that shaft sinking at his firm's potash mine near Esterhazy, Saskatchewan is "proceeding satisfactorily." Sinkers are more than half-way through the 200-foot water-bearing sands, frozen at about -50 degrees F. after a year of freezing. A cast-iron lining is being installed in five-foot rings, 11 segments to a ring, simultaneous with the sinking.

SULFUR TERMINAL TO BE BUILT IN VIRGINIA

Construction of a \$300,000 molten sulfur terminal has begun at Elizabeth River Terminals near South Norfolk, Virginia. It will enable Hampton Roads to receive sulfur in the liquid form. It will be brought in 20,000-ton tankers from the Beaumont, Tex. plant of the Texas Gulf Sulphur Co. The material will be converted to a dry form at the new terminal for delivery to users.

MID-STATE GETS NEW FERTILIZER PLANT

Mid-State Fertilizer Co. is building a new fertilizer plant at Shepherd, Mich. James A. Parsons will manage the new plant which is to be equipped with both bulk and bagged facilities and for production capacity of 20 tons per hour. Mid-State expects to be in production shortly after January 1st.

SAN FRANCISCO CHEM'S COMPLEX ON STREAM

San Francisco Chemical Co.'s phosphate mine-mill complex near Vernal, Utah was scheduled to begin production around the middle of December. Phosphate concentrate from the 600,000-ton-a-year facility will be shipped by truck to Western Phosphates, Inc.'s plant at Garfield for manufacture into treble superphosphate fertilizers.

D. L. King, president of San Francisco Chemical, said that the deposit could be strip-mined for 100 years or more without resort to underground methods.

MURIATE OF POTASH DELIVERIES CUT BACK 8%

A cutback in deliveries of imported muriate of potash by approximately 8 per cent and a threatened rail strike in Canada may seriously affect the flow of basic chemicals into fertilizer plants. The cutback will mean a loss of between 16,000 to 18,000 metric tons in U. S. imports between now and April 1961 and approximately 120,000 metric tons for the world market.

A slowdown strike lasting about 30 days at French mines, together with a mechanical breakdown at the major Spanish mine, are factors responsible for the loss in potash tonnage.

GRANULAR POTASSIUM METAPHOSPHATE BOOKLET

A booklet outlining a new process which has been developed and patented for the manufacture of granular potassium metaphosphate from phosphoric acid and potassium chloride at relatively low temperatures has been published by Scottish Agricultural Industries, Ltd. Possible applications for the substance are also discussed.

3% DIVIDEND FROM DIAMOND ALKALI

Diamond Alkali Co. has declared a three per cent stock dividend, payable December 23 to holders of record December 1, plus a quarterly dividend of 45 cents on common, payable December 12 to holders of record December 1.

AGRICULTURAL INDUSTRIES FORUM AT U. OF ILL.

Changes in serving customers farm supplies will be featured during a series of sessions at the University of Illinois Agricultural Industries Forum on January 31 and February 1. At the first session, J. A. Ewing, statistician in charge of the Illinois Cooperative Crop Reporting Service, will report on changes in size of enterprises within Illinois agriculture, C. B. Baker, U. of I. professor of agricultural economics, will discuss livestock handling and H. B. Puckett, USDA agricultural engineer, will report on new ideas in mechanization.

Other sessions will deal with the following areas: feed, buildings and equipment; fertilizers and chemicals; serving livestock feeders; farm supply and equipment.

I.J.M.A. DELEGATION ANALYSES MARKET

"The increase of approximately 25 per cent in burlap prices in the American market which has been sustained in the last six months, while regrettable, is only temporary," said D. C. B. Pilkington, chairman of the Indian Jute Mills Association of Calcutta. Speaking as the leader of the delegation, he stated that, while the price rise is a direct reflection of the short jute crop in the current season, the industry is taking all possible steps to reduce the impact of higher prices for raw jute and finished goods on its overseas buyers until the squeeze can be relieved in the next crop year.

The Association adopted a policy providing for the compulsory sealing of looms with the object of reducing the demand for raw jute. A quota system for its purchase by the mills has been agreed upon in order to prevent competitive bidding for available supplies.

CDP CENTER OPENS IN CALIFORNIA

A commercial data processing center in the West opened recently at the new Kaiser center in Oakland, California. Two Remington Rand Univac solid-state computers, one utilizing magnetic tape, form the hub of the center's activi-

ties. The tape system is the first such installation on the West Coast.

The center provides the 60 affiliated Kaiser companies with the facilities to process their computing requirements.

AUTOANALYZER CHECKS AIR POLLUTION

A major advance has been reported by public health officials in the continuing war being waged against air pollution. In the Nashville Community Air Pollution Study investigators perfected an automatic technique for determining tiny traces of sulfur dioxide contaminants in the atmosphere using a Technicon AutoAnalyzer. The device, manufactured by Technicon Controls, Inc., was set up in the Industrial Hygiene Laboratory, Tennessee Dept. of Public Health.

Handling the laboratory workload of analyzing 130 atmospheric samples per day was made feasible by adaptation of TCM method of colorimetric determination for use with the AutoAnalyzer.

COMMERCIAL SOLVENTS DECLARES DIVIDENDS

The Board of Directors of Commercial Solvents Corp. recently declared a regular fourth quarter dividend of 15 cents per share of common stock. It also voted a two per cent stock dividend on the company's 2,796,250 issued shares of common stock. The two dividends were to be paid at the end of December.

The fourth quarter declaration brings the total cash dividend for 1960 to 50 cents per share, a 100 per cent increase over those paid in 1959.

RENNEBURG COMPLETES RESEARCH CENTER

Edw. Renneburg and Sons Co. has recently completed its new research and development center. It includes a modern product testing laboratory and pilot plant facilities. Specially designed units permit rearrangement and modification of lifting and distributing flights, air handling systems and air heating furnaces to other working parts.

9th EDITION OF OFFICIAL METHODS OF ANALYSIS

The ninth edition of *Official Methods of Analysis* for such products as foods, food additives, drugs, cosmetics, pesticides, feeds and fertilizers is now being distributed by the Association of Official Agricultural Chemists.

This 832-page compilation is the primary source of methods of analysis used by the Pure Food and Drug Administration, USDA and other federal and state government law enforcement agencies in the U. S. and throughout the world. The extensive checking the methods have undergone to qualify for adoption by the association gives them a high degree of reliability for use in developing court evidence. The volume also provides regulated industries with methods of checking their products to make sure they comply with the law.

U. S.-ISRAEL MINERAL AGREEMENT

An agreement granting prospecting rights to part of Israel's phosphate deposits to a U. S. company was signed by the Israeli minister of development, M. Bentov, during his recent visit to the U. S.

The agreement provides that the company, the name of which has not yet been released, spend at least 90 thousand pounds on prospecting in the next two years. Should the deposits uncovered justify it, the company will invest up to three million pounds in erecting a processing plant capable of turning out 500,000 tons of phosphates annually.

FOOD CHEMISTRY PIONEER HONORED

Dr. C. H. Bailey, a pioneer in establishing scientific techniques used in production of today's baked goods and other cereal products, received the Charles F. Spencer Award. Presentation of the award by C. Y. Thomas, Board chairman of Spencer Chemical Co., climaxed the annual Fall Chemical Conference. Dr. Bailey, Dean Emeritus of the Institute of Agriculture, University of Minnesota, delivered an address on "Integration of Science and Technology in Food Research."

NEWS OF THE INDUSTRY

CALIFORNIA CHEMICAL BUILDS AMMONIA PLANT

California Chemical Co., subsidiary of Standard Oil Co. of California, has announced the awarding of a contract to the Bechtel Co. for the construction of an ammonia plant at Fort Madison, Iowa. The most important unit in a complex of chemical fertilizer plants totaling 22 million dollars, the plant is expected to be completed in late 1961.

Utilizing natural gas as feed

stock, this plant will combine it with nitrogen from the air to produce 300 tons of liquid anhydrous ammonia per operating day.

PROMOTIONS WITHIN NITROGEN DIV.

Allied Chemical's Nitrogen Div. has announced several promotions resulting from a recent decision to establish four major agricultural sales regions. Four new positions were created at headquarters in New York and four regional sales

managers appointed in the field. Under the reorganization, the new regional sales managers will be responsible for both direct application fertilizer sales and fertilizer manufacturing material sales in their respective regions.

Garvin C. Matthiesen, agricultural sales manager; Thomas C. Rogers, product manager, fertilizer manufacturing; George A. Kalteisen, product manager, direct application sales and Elmer Perrine, director of technical service, agricultural products, are the promotions to the New York area. The new regional sales managers are: Borden S. Chronister, at Hopewell, Va.; John R. Ritter, at Raleigh, N. C.; Dean Keller, Indianapolis, Ind.; Homer E. Dudley, Omaha, Neb.

TENNESSEE CORP. BOOSTS DIVIDENDS

Tennessee Corp. boosted its quarterly dividend to 35 cents on common stock from 31¼ cents in previous quarters, payable December 16 to holders of record December 1. The company also declared a two per cent stock dividend on common, payable December 28 to holders of record December 1. At the same time last year, a 12½ cent cash extra dividend was declared.

The firm's dividends for 1960 total \$1.283¾ plus the two per cent stock dividend. Last year the total was \$1.261¼ in cash on present shares. The stock was split two-for-one in October 1959.

TEXACO TO BUILD MAJOR BENZENE PLANT

One of the world's largest benzene plants will be built by Texaco, Inc. at Port Arthur, Texas. It will produce up to 30 million gallons of benzene a year, most of which will be marketed directly to U. S. chemical firms. The new plant will help to free domestic chemical companies from dependence on European and Iron Curtain sources.

Expected to begin operations in the second quarter of 1962, the plant includes a unifier-catalytic reforming unit, udex extraction unit and treating and fractionation facilities.

FLOMAX PUMPS...

ALL-IRON for Liquid Fertilizer
ALL-ALUMINUM for Nitrogen Solutions
with STAINLESS STEEL
studs, nuts, impeller sleeve and shaft seal



The truck is a mobile bulk station with its permanently mounted FLOMAX 8. The trailer, with its own FLOMAX 8, becomes a completely self-contained nurse tank at any farm or ranch—no matter how remotely located. Agriform Co. (Wash.) uses FLOMAX pumps exclusively.

MP Pumps—FLOMAX SELF-PRIMING CENTRIFUGALS—Engine Driven (or belt or electric motor drive) are now the standard for pumping Liquid Plant Foods.

The Open Adaptor: Liquid being pumped can *never* touch the engine shaft or bearing or get into the engine itself.

The greaseless Seal; covered by fluid at all times. Never needs lubrication. Rides on stainless steel sleeve.

Continuous, uninterrupted operation is absolutely important. You must not have interruption of pumping during the handling or application of the liquid. You have continuous performance operation with the MP FLOMAX series.

All-Iron	FLOMAX 5..1½" .100 GPM
OR	FLOMAX 8..2" .140 GPM
All-Aluminum	FLOMAX 10..2" .200 GPM
	FLOMAX 15..3" .280 GPM



Send NOW for complete information

MARINE PRODUCTS CO.

594 LYCASTE AVE. • DETROIT 14, MICH.

PUMPS

NEED FOR FOOD PRODUCTION TO EXPAND

"Fertilizer production must be quadrupled by the end of the century if the world is to grow enough food for its expanding population." This is the opinion of Dr. Frank Parker, deputy director general of the United Nation's Food and Agricultural Organization. "The current annual world consumption of fertilizer will have to rise from 24 million tons to 100 million tons if food supplies are to be adequate," Dr. Parker said in explaining the U. N.'s Freedom From Hunger campaign to a Chicago meeting of Midwest agricultural and business leaders arranged by Thomas M. Ware, president of International Minerals and Chemical Corp.

Agricultural production can easily be doubled, or feasibly tripled, with the introduction of adequate fertilizer programs, Parker said, in conjunction with better seed and better cultivating practices. The mainstays of the U. N.'s program will be intensive educational and research campaigns in all the less developed countries, citing the need for fertilizer.

SMITH-DOUGLASS REPORTS LOWER EARNINGS

Earnings of Smith-Douglass Co., Inc. for the first quarter in 1960 were \$438,414 as compared to \$645,922 for the same period last year. Per share earnings were 40 cents per share for the current year compared with 63 cents in the previous year.

IMC, S.A. OPENS OVERSEAS SALES OFFICE

International Minerals and Chemicals, S. A. has begun operation of its new overseas sales office in Puerto Rico. The new office, located in Santurce, will serve as headquarters for IMC's sales in Latin America and the Far East. Luis Vergne, a native of Puerto Rico, will head the office as managing director.

ALCO TO MARKET FIRST CONSUMER PRODUCT

In a recent annual report Alco Oil and Chemical Corp. announced an increase in sales to \$5, 537,000 in

1960 as compared with \$5,300,000 in 1959. The extraordinary expenses engendered by the Soil-Set program were mainly in the areas of technical development and market introduction of the new product.

As a part of the firm's plans for 1961, Alco will launch Soil-Set as a consumer product, as well as an industrial material.

CUNNINGHAM NAMED FARM EDITOR OF THE YEAR

Glenn Cunningham, assistant farm editor of the Des Moines, Iowa *Register and Tribune* and co-editor of the *Iowa Farm and Home Register* was honored as the Newspaper Farm Editor of the Year in a nation-wide contest sponsored by the Newspaper Farm Editors Association and the National Plant Food Institute.

Louis H. Wilson, secretary and director of information of the Institute, presented him with a scroll signed by the national board of judges for the contest.

ANTARA CHEMICALS DEVELOPS EMULSIFIERS

Antara Chemicals Div., General Aniline and Film Corp., announces the introduction and availability of a new series of emulsifiers. These anionic surfactants will be sold under the newly-established trade mark as Gafac. Initial application areas include the following fields: emulsifiers for pesticide-liquid fertilizer systems, emulsion polymerization, textiles (including synthetics), heavy duty and light liquid detergent cleaning compounds, metal cleaning and dry cleaning.

"NEW HERBICIDES FROM INDUSTRY"

For the third year, the Northeastern Weed Control Conference will feature "New Herbicides from Industry" when it meets in New York on January 4, 5 and 6. Industry representatives have been invited to participate by presenting data on: new herbicides that will be available for experimental testing in 1961; new herbicides now commercially available or to be marketed for the coming season; improvements made on existing herbicides or extended new uses for them.

Better and more profitable pesticides through RESEARCH



Screen your promising chemical compounds for potential activity and commercial use as . . .

- INSECTICIDES
- HERBICIDES
- NEMATOCIDES
- SLIMICIDES
- ALGAECIDES
- BACTERICIDES
- FUNGICIDES

Send for complete details on procedures and prices.



P. O. Box
2217
Madison 5,
Wisconsin

**WISCONSIN ALUMNI
RESEARCH FOUNDATION**

NEWS OF THE INDUSTRY

HERCULES DECLARES YEAR-END DIVIDEND

The Board of Directors of Hercules Powder Co. has announced a year-end dividend of 55 cents a share on common stock, payable December 23 to stockholders of record at the close of business, December 5. The company has paid interim dividends of 25 cents a share in each of the three preceding quarters.

MONSANTO CONSTRUCTS NEW ESTER UNIT

Monsanto Chemical Co. has announced construction is under way in Illinois on a new unit for the manufacture of 2,4-D and 2,4,5-T esters for broadleaf weed and brush control. Scheduled to come on stream in January, the facility is designed to produce these esters in further improved quality.

FREEPORT SULPHUR OPERATES NEW MINE IN LA.

Freeport Sulphur Co. has placed in operation a new sulfur mine at Lake Pelto on the marshland shore of the Gulf about 60 miles southwest of New Orleans. To mine the deposit, the company is using its barge-mounted plant at the now-depleted Bay Ste. Elaine deposit.

Associations Meetings

ANNUAL K-STATE FERTILIZER CONFERENCE

The 13th annual fertilizer conference was held recently at Kansas State University. The first sessions were devoted to reports on K-state fertilizer studies for the past year. Kansas fertilizer sales for the year ending June 30, 1960 totaled 333,000 tons—a ten-fold increase over 1947 when dealers were selling 33,000 tons a year, and when the University held its first conference.

Floyd W. Smith, Kansas state agronomist, estimated this increased amount of fertilizer supplied 134,000 tons of plant food "and if used according to K-state recommendations, should have added approximately \$60 million to the gross income of Kansas farmers."

10th AAI CONVENTION TO BE HELD IN JAN.

Emphasis will be on the agronomic aspects of direct application ammonia as the Agricultural Ammonia Institute holds its tenth annual convention in Memphis, Tenn.

January 11-13. Presiding will be Carl J. Bauserman of Southern Michigan Nitrogen Co.

The Institute was organized to meet the need for information on use and equipment, and it also functions as liaison center for the ammonia-producing industry.

COLO. AG. CHEM ASS'N. HOLDS ANNUAL MEETING

The Colorado Agricultural Chemicals Association will hold its annual business meeting and banquet January 26 and 27. The meeting and banquet on the evening of the 27th is open to all members of the chemical industry and interested jobbers and formulators of farm chemicals.

The meeting will be held at the Cosmopolitan Hotel in Denver, Colo.

FARM EQUIPMENT INST. CONFERS IN ATLANTA

The Farm Equipment Institute Production and Marketing Dept. will hold its annual winter meeting on January 17 at the Dinkler Plaza Hotel, Atlanta, Ga. The subject will be "The Use of Credit in the Farm Equipment Industry." E. G. Kullman of Allis-Chalmers Manufacturing Co. will be the chairman of a panel group discussing the use of credit in the industry. Panel members are: H. L. Nichols, Massey-Ferguson, Ltd.; J. D. Grayson, J. I. Case Co.; H. Ebsen, International Harvester Credit Corp.

15TH ANNUAL WISCONSIN PESTICIDE CONFERENCE

The 15th annual meeting of the Wisconsin Pesticide Conference will take place January 5 to 6 at Memorial Union, University of Wisconsin. It will be sponsored by the College of Agriculture, Depts. of Agronomy, Entomology, Horticulture and Plant Pathology. Sessions will cover topics ranging from a panel discussion on granular pesticides to weed control in pasture, corn and soil bank land.

FARM FAMILIES BORROWED \$342 MILLION FROM FHA

American farm families borrowed an estimated \$342 million through the Farmers Home Administration's field offices during 1960, according to the USDA.

Calendar

Jan. 9. Farm Supply and Service Conference, National Council of Farmer Cooperatives, Jung Hotel, New Orleans, La.

Jan. 10. Iowa State University Fertilizer Dealers' Short Course, Memorial Union, Iowa State University, Ames, Iowa.

Jan. 10-11. Texas Plant Food Conference, College Station, Texas.

Jan. 11. Fertilizer Industry Representatives Conference, Memorial Union, Iowa State University, Ames, Iowa.

Jan. 11-13. Agricultural Ammonia Institute, 10th annual convention, Memphis, Tenn.

Jan. 17-19. Instrument Society of America Winter Instrument-Automation Conference and Exhibit, Sheraton-Jefferson Hotel (conference), Kiel Auditorium (exhibit), St. Louis, Mo.

Jan. 25-26. Custom Spray Operators' Training School, 13th annual, University of Illinois, Urbana.

Jan. 26-27. Colorado Agricultural Chemicals Association, annual meeting and banquet, Cosmopolitan Hotel, Denver.

Jan. 31-Feb. 1. Agricultural Indus-

tries Forum, University of Illinois, Urbana.

Feb. 2. Chemical Buyers Group of National Association of Purchasing Agents, mid-winter conference, Commodore Hotel, New York City.

Feb. 6-8. Association of Southern Agricultural Workers, Agronomy Section, 58th annual meeting, Heidelberg Hotel, Jackson, Miss.

Feb. 9-10. Midwest Industry-Agronomists meeting, sponsored by National Plant Food Institute, Chicago, Ill.

Feb. 14-15. Aquatic Weed Control Society, second annual meeting, LaSalle Hotel, Chicago, Ill.

Feb. 16-17. Midwestern Agronomists and Fertilizer Industry Representatives, annual conference, Edgewater Beach Hotel, Chicago, Ill.

Mar. 2. Drug, Chemical and Allied Trades Association, annual banquet, Waldorf-Astoria Hotel, New York City.

Mar. 13-15. Western Agricultural Chemicals Association, spring meeting, Disneyland Hotel, Anaheim, Calif.

Mar. 21-30. American Chemical Society, national meeting, St. Louis, Mo.

HEALY PRESIDENT OF CHEMICAL ENGINEERS

John J. Healy, an executive of Monsanto Chemical Co., was named president of the American Institute of Chemical Engineers, representative body of the chemical engineering profession, for the coming year. Other officers are: J. Henry Rushton, professor of chemical engineering at Purdue University, reelected treasurer; John J. McKetta, chairman of Chemical Engineering Dept., University of Texas, vice president; F. J. Van Antwerpen of Nutley, N. J., reelected secretary.

Elected to the Board of Directors for three-year periods were: Robert J. McNally, vice president, Garfield Chemical and Manufacturing Corp.; Max S. Peters, head of Div. of Chemical Engineering, University of Illinois; Carl F. Prutton, executive vice president, Chemical Div., Food Machinery and Chemical Corp.; Robert R. White, vice president, Atlantic Refinery Co.

MISS. INSECT CONTROL CONFERENCE

A highlight of the seventh annual Mississippi Insect Control Conference at Mississippi State University January 5-6 will be a progress report on the new boll weevil research laboratory. Dr. T. B. Davich, director of the research center, will report on its status and the proposed problems for study.

About 350 entomologists, agricultural workers, farmers and representatives of the agricultural chemical industry are expected to attend the conference. The latest findings on other cotton insects, field crop insects and those attacking livestock will be featured.

ASAE MEETS IN MEMPHIS

An engineering look into farming of the future was taken by the American Society of Agricultural Engineers in Memphis, Tenn. recently. They examined the possibility of harnessing the sun's power for work on the farm. In radiation, the engineers explored the theory of infrared drying of agricultural and industrial products, instrumentation and what radiation offers agriculture.

A series of reports described research directed to improve appli-

cation of liquid agricultural chemicals, spray sizes and distribution of pesticides, equipment designed to minimize plant damage in applying herbicides and fertilizer placement.

WEED CONTROL CONFERENCE OFFICERS MEET

The executive committee of the Northeastern Weed Control Conference met recently to complete plans for this coming year's conference. It will be held January 4, 5 and 6 at the Hotel New Yorker. More than 100 papers will be presented on all aspects of weed control.

First row in the picture below are: Dr. D. A. Shallock, secretary-treasurer (Extension weed control specialist, Rutgers University); Lawrence Southwick, vice president (The Dow Chemical Co.); E. M. Rahn, president (Dept. of Horticulture, University of Delaware); Dr. M. W. Meadows, program committee chairman (G. L. F. Soil Building Service).

Second row includes: A. B. Lindquist, public relations committee, (Stauffer Chemical Co.); A. J. Tafuro, sustaining membership committee (Amchem Products);

Dr. P. W. Santelman, research coordinating committee (Dept. of Agronomy, University of Maryland).

DEXTER CITED AS TOP CROP SCIENTIST BY ASA

A Michigan State University professor, Stephen T. Dexter of the Dept. of Farm Crops, has been named the nation's top crop scientist this year by the American Society of Agronomy. The award, Crop Science Achievement Award, was presented at the society's 53rd annual meeting in Chicago.

Two other Michigan State scientists were honored for their election as Fellows of the society. They are Carter M. Harrison and Eugene P. Whiteside.

CYANAMID INTERNATIONAL APPOINTS REPRESENTATIVE

Appointment of Dr. Jaime Ocampo as technical representative for the General Chemicals Dept. of Cyanamid International was announced recently. He will advise chemical processing companies in Latin America and the Far East on the uses of Cyanamid chemicals in producing improved products and in modernizing the processes of existing products.



Northeastern Weed Control Conference Executive Committee. Front: Shallock, Southwick, Rahn and Meadows. Second row: Lindquist, Tafuro and Santelman.

NEWS OF THE INDUSTRY

People

Abbott Laboratories, Chemical Marketing Div., has named William J. Wilkin product manager of animal health and feed additives. Wilkin joined Abbott in 1957 as a sales representative and was transferred in 1960 to Veterinary Sales Dept. in Chicago.

American Cyanamid Co. announces the appointment of Dr.



King

Lederle Div.

John A. King to the position of director of animal science research for the Agricultural Div. He replaces Dr. E. L. R. Stokstad who is now a research fellow in Cyanamid's

Armour Agricultural Chemical Co. has made the following appointments in various divisions: A. W. Chandler, manager of Greensboro, N. C. Div.; N. D. Odom, assistant manager of Memphis, Tenn. Div.; M. E. Stambaugh, assistant manager of Carteret, N. J. Div.; S. C. Evans, assistant manager of Baltimore, Md. Div.; O. M. Troyer, branch manager of Centralia, Mo. Div. and D. P. Brunetti, advisor of specialty sales in Carteret Div.

Armour Industrial Chemical Co. appointed Richard A. Reck as chief chemist, succeeding the late Vernon Franklin. Reck will be responsible for the McCook, Ill. Control Laboratories, issuance of specifications on all products and approval of product shipments and incoming raw materials.

SITUATION WANTED

Young man, mid 30's, desires position in the farm chemicals industry. Background as market analyst with two major chemical and mineral companies and associate editor with leading trade magazine. Will relocate if necessary. Available immediately for interview and employment.

Vincent Squazzo, 110-D, Wallworth Apts., Haddonfield, New Jersey



Tucker

John Blue Co. has elected William D. Tucker to the office of executive vice president of the firm. Tucker has been with the company for more than 25 years.

Bemis Bro. Bag Co. made three appointments within the sales operations.

George W. Finlay has been named manager of the Wichita bag plant and sales division in the General Sales Dept., St. Louis. U. A. Tull succeeds Finlay as su-



Finlay



Tull



Woodmansee

pervisor for multiwall bag sales. Donald H. Woodmansee, Jr. succeeds Tull as sales manager of Memphis Sales Div. Finlay will assume his new position February 28, and Tull's and Woodmansee's appointments are effective December 1.



Roquemore

He will be responsible for administration and coordination of projects in the pilot stage.

Chemical Construction Corp. elected Clark P. Lattin, Jr. to the post of vice president in charge of petroleum and petrochemical de-

velopment. According to the president, James H. Curtis, "Mr. Lattin will strengthen and broaden Chemico's top management, as part of the overall expansion . . ."

Columbia-Southern Chemical Corp. has announced that William T. Newman has been appointed a technical service engineer at company headquarters in Pittsburgh, Pa., Fred P. Ewald, Jr. has joined the Barberton Research Center as a senior research chemist and James E. Wyche III has joined the Lake Charles, La. plant as a chemical engineer.

Commercial Solvents Corp.

has named Thomas E. Ashworth to its Agricultural Chemical Sales staff. He is assigned to the Southeastern district with headquarters in the Atlanta, Ga. office. He will cover Florida.



Ashworth

Diamond Alkali Co., International Div., announced that Stanley B. Honour is promoted to sales manager of the division. According to the general manager, Samuel S. Savage, "The promotion is part of a program to increase Diamond's emphasis in foreign marketing activities and to effect greater efficiencies in the company's International Div."

In another Diamond appointment Ernest R. Sarrey will assume responsibilities as controller of the International Div. At present, he serves as administrative assistant in the Electro Chemicals Div., Cleveland. Replacing Sarrey, will be Alfred H. Narwold, Jr., who is presently an accountant-finance analyst on the treasurer's staff.

Hooker Chemical Corp. Dr. J. Howard Brown, Robert F. Schultz and Dr. Alvin F. Shepard have been named to new posts in a realignment of the Corporate Research and Development Dept. It was announced by Dr. Chris A. Steigman, newly-elected vice president of research and development.

FARM CHEMICALS

Brown becomes manager, research; Schultz, manager, process and development and Shepherd, senior scientist. They had been, respectively, manager of chemical research, production manager of Eastern Chemical Div. and manager of plastics research.

The following personnel changes have been made in the Process Development Dept. now headed by Dr. Schultz, which becomes a corporate rather than a divisional operation. Joy E. Beanblossom becomes department head of semi-commercial operations; David S. Rosenberg, section manager of process development.

Dr. Marion B. Geiger is the new director of Hooker's international development. Transferred from Niagara Falls, he has been director of general development.

Walter Q. Jack becomes supervisor, technical service, in the Sales Dept. of the Western Chemical Div. He has been with Hooker in Tacoma, Wash. as a technical service engineer.

Indiana Farm Bureau Cooperative Association, Inc. announced that Arthur R. Mullin, manager of the Fertilizer Dept. since 1944, will retire December 31. Melvin Leach, fertilizer production manager, will succeed Mullin.

National Distillers and Chemical Corp. appoints Henry L. Brown director of public relations. Formerly a vice president of Doremus and Co., advertising and public relations agency, Brown had worked on the National Distillers account for the past twelve years.

Merck Chemical Div. has appointed Dr. Edgar R. Marookian to the position of manager of technical service, animal health products. For the past two years, he has been technical specialist of the South



Marookian

Central Region with headquarters in Dallas.

Monsanto Chemical Co. named John S. Sullivan sales manager of the New York district for the company's Agricultural Chemicals Div. He has served as acting sales manager since August when he was transferred from St. Louis headquarters.



Sullivan

Robert O. Knox has been appointed marketing services supervisor for Monsanto's Ag Chem Div. He has served as a cost accountant in the Organic Chemicals Div.

Niagara Chemical Div., Food Machinery and Chemical Corp. David G. Hanson has joined Niagara as advertising assistant where he will be concerned with duties surrounding space advertising, literature, trade exhibit, direct mail and publicity programs. Hanson was farm editor of the *Union Sun and Journal* of Lockport, N. Y.

F. S. Royster Guano Co. has appointed James T. Via sales representative of its local Norfolk territory and Ross H. Walker as sales representative for the West-central portion of Alabama.

Southern Nitrogen Co., Inc. announced that its director of agronomy, Dr. Irvin M. Wofford, has been elected president of the University of Georgia's Agricultural College Alumni Association. As president, Wofford will direct the state-wide association's efforts to cooperate with and support the schools of veterinary medicine, home economics and forestry.

Summers Fertilizer Co. advises that Jere G. Moynihan, general sales manager for Summer's interests in Maine and New Brunswick, has moved his headquarters from Sandy Point to Houlton, Maine. He replaces F. H. Totman in charge of Aroostook activities. Totman will continue as director of the firm.

Tennessee Corp. has promoted J. T. Parkerson, Jr. to the position of assistant general manager at the East Point plant. Stationed in Atlanta, Parkerson was a sales and technical service specialist on liquid sulfur dioxide prior to his promotion.

Texaco, Inc. appointed John K. McKinley as general manager of Texaco's Petrochemical Dept. Formerly manager of commercial development processes in the Research and Technical Dept. at Beacon, N. Y., he will now be located in New York City.



CREEK-O-NITE CLAY

DUST

For
Insecticide
Carriers, Diluents

GRANULES

For
Agriculture
Applications

FINES

For
Conditioning
Fertilizers



ILLINOIS INDIANA MISSOURI KENTUCKY

BOLMSTED

USE THIS CENTRALLY LOCATED SOURCE OF HIGH QUALITY, LIGHTWEIGHT MONTMORILLONITE CLAY FOR SAVINGS ON SHIPPING COSTS

**PRODUCED WHERE OHIO AND
(★) MISSISSIPPI RIVERS MEET**

This high grade clay is available in a variety of textures to meet specific needs.

SAMPLES AND PRICES WITHOUT OBLIGATION

WRITE TODAY!

STAR ENTERPRISES, INC.
212 York Street, Cassopolis, Michigan

Send samples and data on CREEK-O-NITE:
☐ Dust ☐ Granules ☐ Fines.

FIRM NAME _____

BY _____

ADDRESS _____

CITY _____ STATE _____

Union Bag—Camp Paper Corp. has made a number of changes in its Bag Div. Harry



Recher

Recher, former director of flexible packaging sales, was named manager of bag sales. William Mellick, director of chain store sales, was appointed director of flexible packaging sales. Frank Little continues as director of standard products sales and has been given additional responsibility of supervising chain store sales.

Union Carbide Chemical Co., division of Union Carbide Corp., appointed E. E. Husted as manager of Fluorocarbons marketing. Since 1948, Husted has been sales manager of Ucon propellants. He is succeeded in that post by Thomas M. Hartley. Hartley, for the past two years, has been sales manager of Ucon refrigerants.



Husted



Hartley



Hulten

Union Carbide also named John R. Hulten manager of specialty chemicals marketing. He is responsible for marketing Ucon fluorocarbons to aerosol, air conditioning, refrigeration industries and agricultural chemicals.

Wisconsin Plant Food, Inc. Dr. Paul H. Hornburg, president of the firm, died November 20 at his home in Watertown, Wis. of a heart attack.

Witco Chemical Co., Inc. promoted Rudolph Cubicciotti to administrative vice president. In his new post, Cubicciotti will direct the planning and coordination of all activities that relate directly to future corporate growth. His responsibilities will extend to all Witco divisions. Prior to his promotion, he was vice president of Sonneborn Chemical and Refining Corp., a Witco subsidiary.

Government

USDA NAMES 2 DIRECTORS OF GRAIN INSECT LABS

Appointments of Dr. Wayne L. Howe as director of the Northern Grain Insects Laboratory at Brookings, S. D. and Dr. H. C. Cox as director of the Southern Grain Insects Laboratory at Tifton, Ga. were announced recently by USDA. Both appointments are effective January 8.

Dr. Byron T. Shaw, administrator of the Dept.'s Agricultural Research Service, said the two new \$550,000 laboratories will be completed by July 1961. In these laboratories ARS research specialists will work together with state agricultural experiment station scientists in seeking more satisfactory control methods for insects that attack grain crops.

NEWSPAPERS OF AMER. GIVEN SMOKEY BEAR AWARD

For outstanding contributions to forest fire protection, the newspapers of America were presented with a gold Smokey statuette at the diamond jubilee fall meeting of the National Editorial Association in Minneapolis. Paul C. Smith, president of the association, accepted the award which was presented by John Beale, State Forester of Wisconsin, representing the executive committee responsible for directing the program and made up of four state foresters and three members of the Forest Service.

Smokey Bear statuettes were also given this year to Foote, Cone and Belding Advertising Agency for its 20 years of public service donated to promoting forest fire prevention and to the Post Office Dept. for its program through the use of truck posters and mail cancellation stamps.

Chemicals

NEW N-ALKYL BROMIDES

Four n-alkyl bromides have been added to the list of development and semi-commercial products offered by Michigan Chemical Corp. The compounds are cetyl bromide, hexyl bromide, myristyl bromide and stearyl bromide. These supplement the alkyl bromides—methyl, ethyl, butyl and lauryl—which already are available.

Methyl, ethyl and butyl are classified as short-chain compounds, which can be employed as alkylating agents to form organo-metallics or pharmaceutical intermediates. The others are long-chain compounds, which can be used to impart germicidal or algicidal activity to quarternary derivatives.

WEAPON AGAINST CRABGRASS

Experiments conducted at Eli Lilly and Co.'s Greenfield, Ind. research laboratory have demonstrated that a chemical called Diphenatril provides effective pre-emergence control of seedling weed grasses. According to E. F. Alder, head of Lilly plant science research work, "It has given 100-per cent control in many tests, without any injury to established turf."

Research results indicate that one spring application at the rate of 30 pounds per acre before weed grass seeds begin to sprout gives full season protection.

Commercial products resulting from Diphenatril research will be marketed by Elanco Products Co., the Lilly marketing division for agricultural, industrial and home products.

DOW CRABGRASS KILLER

Introduction of a new lawn care product, Dow Crab Grass Killer, was announced recently by The Dow Chemical Co. The product is Dow's first tailored especially to the home lawn market. Until this time, Dow's agricultural products have been supplied entirely to the farm and industrial markets.

The substance is based on Zytron, a new weed control compound discovered by Dow. The product is a pre-emergence material designed for application in spring

before crabgrass sprouts, thus preventing the seeds from germinating.

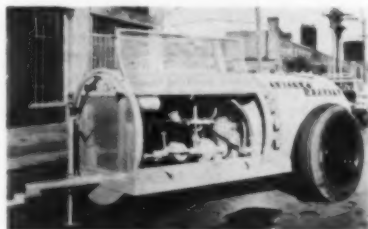
John H. Prine has been named to head the newly-formed lawn and garden products section, which will handle the new product.

MONSANTO BUILDS PLANT IN N. J.

Monsanto Chemical Co. has announced plans to construct a new plant which will add 50 million pounds to its production capacity of Santicizer 160, a proprietary plasticizer. The unit will be located at the company's new 650-acre site on the Delaware River in Gloucester county, N. J. Monsanto will also construct a plant at the new site for 20 million pounds per year of benzyl chloride, an ingredient in Santicizer 160.

Equipment Supplies

NEW SPRAYER DESIGN

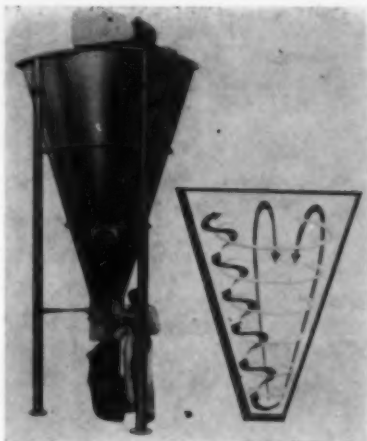


A new concept in sprayer design offers several advantages, according to T. E. Colvin, president of Besler Corp. The blower and outlets of the Besler model #K475 are located in the center of the sprayer between the tank and engine. This central location eliminates the need for a long driveshaft and the attendant bearing and whip problems. The new location also reduces the suction of leaves, pebbles and dust into the fan and cuts down maintenance attention. Get more information by

CIRCLING 27 ON SERVICE CARD

"NAUTA" MIXER USES 3-WAY ACTION

The J. H. Day Co., division of The Cleveland Automatic Machine Co., announces it has been granted the exclusive license by NautaMix N. V. of Haarlem, Holland to manufacture and sell the Nauta Mixer in the U. S. and Canada. The mixer employs a new, 3-way mixing



action, which is accomplished by a rotating screw positioned along the wall of the conical container. As it revolves, it also orbits around the inside wall, resulting in vertical and horizontal cross-currents throughout the mixer.

Since the contents of the container remain close together and are not whirled around, differences in specific gravity of the components and resistance to air do not influence the accuracy of the mix.

For more information,
CIRCLE 28 ON SERVICE CARD

BELTING DEVELOPMENT USES NYLON

An advance in materials handling through the use of oriented nylon strip, both to strengthen conveyor belting and extend its life, has been announced by Goodall Rubber Co. The belt was developed in conjunction with Spencer Chemical Co. and Moldings and Extrusions, Inc.

Spencer supplied the nylon to Moldings and Extrusions, which developed a process for orienting it into wide sheets of varying gauges.

FOR LEASE: 7500 Acres Sodium, 1400 Acres Diatomite located in Utah and Nevada. Write for full particulars. Address Box 277, Upper Sandusky, Ohio.

8 STEEL TANKS 28' x 10'4" in very good condition. Tanks are 3/4" thick and were used for storage of sulfuric acid. Scrap Corporation of America—600 South Central Avenue, Baltimore, Maryland. Phone Dickens 2-6161.

MODERN INSECTICIDES AND WORLD FOOD PRODUCTION

By F. A. GUNTHER and L. R. JEPSON, both of Univ. of California.

Probes a controversial topic—the effect on humans of the highly poisonous insecticides in use today. Gives an insight into commonly-used pest control methods and the problems involved in their use. Includes enough basic entomology to allow the layman to calculate for himself the validity of the worldwide concern over the use of pest-control chemicals. 1960. 284 pages. \$8.50

SEND NOW FOR
YOUR ON-APPROVAL COPY

JOHN WILEY & SONS, Inc.

440 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

MANUFACTURERS OF SODIUM ARSENITE SOLUTIONS

READE MFG. CO. INC.
130 Hoboken Avenue
JERSEY CITY 2, N. J.

PLANTS: JERSEY CITY, N. J., CHICAGO, ILL.,
N. KANSAS CITY, MO., BIRMINGHAM ALA.,
TEXARKANA, ARK.

FOR SALE

- 1—Raymond 66" 6-roll mill, rebuilt.
- 2—Raymond 50" 5-roller hi-side mill.
- 2—National 10' x 78' rotary dryers.
- 2—Davenport 8' x 60' rot. dryers, 7/16" welded.
- 1—7'-6" x 62' rotary cooler, 1/2" welded.
- 1—Louisville 7' x 70' rot. cooler, 1/2" welded.
- 2—Bonnet 7' x 60' rot. dryers, 5/8" shell.
- 2—Bonnet 6' x 52' rotary dryers.
- 1—Louisville 6' x 50' steam-tube dryer.
- 1—Louisville 5' x 25' steam-tube dryer.
- 1—Louisville 4'-6" x 25' steam-tube dryer.
- 1—Standard 3' x 23' rotary dryer.
- 2—18,000 gal. vert. alum. tanks.

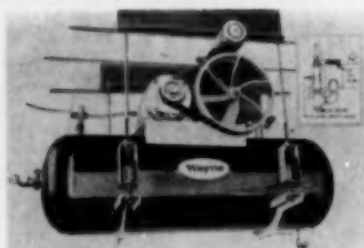
**LARGEST STOCK OF
ROTARY DRYERS & COOLERS**
Send for Circular #860-A

PERRY EQUIPMENT CORPORATION
1430 N. 6th St., Phila. 22, Pa. POplar 3-3265

LIQUIDATING alcohol mfg. & grain processing plant at Omaha, Neb. Stills, dryers, filters, presses roller & hammermills, pumps, etc. Send for circular. Perry, 1430 N. 6th St., Phila. 22, Pa.

NEWS OF THE INDUSTRY

2 NEW AIR COMPRESSORS



Two new air compressors by The Wayne Pump Co. utilize a ceiling suspension system. Models W-398-HO and W-6148-HO are stage units having displacements of 9.5 and 14.0 CFM respectively. Each is supplied with an 80-gallon tank. Each model can be used with single- or three-phase motors.

REUSABLE ALUMINUM NEST-A-BIN

Kaiser Aircraft and Electronics entered the bulk container industry recently with the introduction of the Kaiser Nest-a-bin, a reusable 52½ inch diameter aluminum container for shipping and in-plant

handling of liquids, pastes or granular materials.

The container consists of two cylindrical units joined by a peripheral clamp ring and hermetic seal. When empty, it disassembles so that the units can be quickly cleaned or "nested" inside one another to reduce shipping space.

For details,
CIRCLE 29 ON SERVICE CARD

NO-SPILL BUCKETS FOR "PAYLOADERS"



To help solve spillage problems during transportation, The Frank G. Hough Co. has announced that

their HA, H-25 and HAH tractor-shovel models are now available with no-spill bucket devices. The side sheets are curved to conform to an arc traveled by a combination strikerbar-spillguard. The device hydraulically moves through this arc and strikes off excess material. The strikerbar remains at the front as the bucket is rolled back and lifted to carry position. During travel, the device becomes a load retainer.

For details,
CIRCLE 30 ON SERVICE CARD

D-262 DIESEL ENGINE

Allis-Chalmers Manufacturing Co. is now making available as a commercial engine its D-262 diesel engine. It develops 77 horsepower at 2200 rpm and has a 3 9/16 by 4 3/8 bore and stroke and a 262 cubic inch piston displacement. It features "wet" type cylinder sleeves, full pressure lubrication and a 12-volt electric starting system.

For details,
CIRCLE 31 ON SERVICE CARD

for your dream vacation, visit

ST. PETERSBURG

FLORIDA

another of the great



... and stay at one of Florida's finest resort hotels, overlooking beautiful Tampa Bay and Waterfront Park in the center of the city's playground area, yet is close to shopping, theaters, and all activities. Planned program of entertainment-dancing nightly. Superb food and excellent service.

The

Soreno

Hotel



Season:

November to May

Please send me descriptive literature.

My Name _____

Address _____

City _____ State _____

MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gums. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG 1

MONARCH MFG. WORKS, INC.

2501 East Ontario Street, Philadelphia 34, Pa.

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for the Phosphate Industry. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association.

115 E. BAY STREET, SAVANNAH, GA.

FARM CHEMICALS HANDBOOK

Standard Reference Guide for the Farm Chemicals Industry
Write today to

FARM CHEMICALS HANDBOOK
37841 Euclid Ave. Willoughby, Ohio

Reader Service Department, FARM CHEMICALS

Please send me the following publications (Circle item No.):

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32								

Name

Title

Company

Address

City and Zone State

This Card not good after February 28, 1961

1-1

FIRST CLASS
Permit No. 49
Sec. 510, P. L. & R.
Willoughby, O.

No Postage Stamp Necessary If Mailed in the United States

—POSTAGE WILL BE PAID BY—

FARM CHEMICALS

37841 Euclid Avenue
Willoughby, Ohio



READER SERVICE

*FREE INFORMATION to help you
solve fertilizer, pesticide problems*

Chemicals

1—BUTENEDIOL

Literature has been made available by Antara Chemicals, division of General Aniline and Film Corp., on Butenediol, an unsaturated glycol. Its principal use is as a building block in organic synthesis. It reacts both as a glycol and as an unsaturated compound. Its first applications have been as a chemical intermediate for polymers, herbicides and insecticides. Literature may be obtained by

CIRCLING 1 ON SERVICE CARD

2—ALIPHATIC AMINES

A new booklet prepared by Armour Industrial Chemical Co. tells what aliphatic amines are and how they work. Trade named Armeens, these organic bases are derived from fatty acids. The booklet gives compositions as determined by gas chromatography and includes complete specifications, physical properties reactions and other data for primary, secondary and tertiary amines, along with specialty and polyethoxylated amines. These chemicals are useful in the plastics, rubber, paint, mineral flotation and petroleum fields, among others. To get a copy, just

CIRCLING 2 ON SERVICE CARD

3—UNCOATED UREA

A sample and additional information on urea, guaranteed 46 per cent nitrogen, is available from H. J. Baker & Bro. The uncoated prills are reported to have less moisture than with coated material, and no dust. Baker is sole agent in the United States for Cobelaz of Belgium. To get more information and a sample, simply

CIRCLING 3 ON SERVICE CARD

4—FRITTED TRACE ELEMENTS

FTE, made by Ferro Corp., is applied commercially by mixing it into fertilizer or agricultural limestone. The trace elements have controlled solubility, having been combined with a mixture of "soft" glass. This releases the elements at a slow rate to the plants as the glass decomposes. Complete information may be secured by

CIRCLING 4 ON SERVICE CARD

Process Equipment

5—MULTISTAGE LIQUID EXTRACTOR

The Pennsylvania Tool and Manufacturing Co. has recently released a pamphlet on its multistage mixer-settler liquid extractor for pilot plant solution of complex extraction problems and for limited scale production. The extractor has 20 discrete stages of plus 98 per cent efficiency;

provision for sampling both phases leaving each phase; provision for anti-solvent injection on each stage; feeds up to two gallons per hour; is constructed for pressures up to 600 psi. If you would like a pamphlet,

CIRCLING 5 ON SERVICE CARD

6—PISTON-TYPE ANGLE VALVES

Falls Industries is offering literature on its new line of piston-type angle valves which employ impervious graphite for all internals which contact the corrosives handled. It is immune to effects of thermal shock and will not crack or chip. The valve can be used in place of a 90-degree ell. The valve is a free-flowing type without pockets to trap sediment. Standard ASA flanges are provided for convenient mountings, and Teflon chevron rings are used for packing. To get this free literature,

CIRCLING 6 ON SERVICE CARD

7—SLIDING GATE AND PLATE CONTROL VALVES

An 8-page catalog contains engineering information on OPW-Jordan's sliding gate and plate control valves. Recommended for use on steam, water, air, oil, gas and chemicals, the valves are available in sizes from 1/4" to 6". The catalog gives applications, operating features, materials of construction, pressure and temperature limitations, photos and sizing charts and sample specifications. Controllers, positioners and other accessories are also described. For your catalog,

CIRCLING 7 ON SERVICE CARD

8—MANUFACTURING AND BLENDING UNIT

Standard Steel Manufacturing Co. has complete information on its liquid fertilizer manufacturing and blending unit. Model SC-1 offers one-man operation. It consists of a control panel housed in a water-tight enclosure, double ingredient beam scale for addition of raw materials, raw material pump and valve and an agitator with stainless steel shaft and two 10" diameter three-bladed propellers. Get more details by

CIRCLING 8 ON SERVICE CARD

9—L-S AIR SCRUBBER

A newly designed air scrubbing system promises a solution to the dust collecting problems of chemical plants, according to the manufacturer, Antipol Corp. The unit utilizes a water spray over stainless steel screening to entrap impurities. Discharged air may be recirculated in the plant or released to the atmosphere without risk of contamination. Pressure drop of the air entering the system is low, thus reducing power requirements. The self-cleaning design permits constant operation. Information on the air scrubber is available by

CIRCLING 9 ON SERVICE CARD

10—AUTOMATIC DUST COLLECTION EQUIPMENT

A new line of automatic dust collection equipment, which has modular design and self-cleaning action, has been announced by Torit Manufacturing Co. The continuous operating and cleaning cycles make it suitable for use in plants processing chemicals, drugs, paints and plastics. Constructed of 1/2" polished aluminum, the Torit automatic cleans itself three ways. Eleven models of the equipment are offered, and they range from 2 to 12 in the number of sections they incorporate. Each model is 5' deep and 15' 6" high. Data are available by

CIRCLING 10 ON SERVICE CARD

Materials Handling

11—NIAWEL STORAGE WATER HEATERS

Niagara Weldments, Inc. has just published an illustrated 8-page bulletin introducing its new line of storage water heaters under the trade name of NiaWel. Data cover 55 sizes in both vertical and horizontal models, plus 114 sizes of removable U-tube heating elements. The bulletin also describes Asme construction of tanks and elements, alloys available for special fabrications and the various clads and linings available to extend tank life. To obtain your copy,

CIRCLING 11 ON SERVICE CARD

12—ENPO SUBMERSIBLE SUMP PUMP

A descriptive catalog is available from The Piqua Machine and Manufacturing Co. on its line of Enpo submersible sump pumps. Model 150-A is designed for industrial and commercial installations. The unit features a 1/2 H. P. motor and a quick-change switch. The pump delivers 4200 GPH at 5' head. A catalog will be sent to you, if you

CIRCLING 12 ON SERVICE CARD

how to use the READER SERVICE CARD

- Circle number of literature you want
- Print or type your name, position, company and address
- Clip and mail the Service Card

**See pages 39, 40 and 43 for information
on these Reader Service numbers:**

27—New Sprayer Design
28—"Nauta" Mixer from Day Co.
29—Aluminum Nest-A-Bin

30—No-Spill Buckets for Payloaders
31—Allis-Chalmers New Diesel Engine
32—Ezee-Flow Chemical Applicator

13—ROTARY FEEDER BULLETIN

A rotary feeder for delivering and controlling the feed rate of dry, pulverized and granular materials into high pressure pneumatic conveying systems is described and illustrated in a new 2-page, 2-color bulletin now being offered by Fuller Co. "Dual Air-Inlet DA Feeder" is Fuller's latest addition to the field of dense steam conveying. It delivers into low air volume, high pressure systems with efficiencies up to 98.4 per cent. The bulletin includes a photograph, dimensioned drawings and specifications for all sizes of feeders. For copies of the bulletin,

CIRCLE 13 ON SERVICE CARD

**14—CENTRIFUGAL PUMP
SELECTION CATALOG**

A 12-page selection catalog for users of centrifugal pumps has just been published by Dean Brothers Pumps, Inc. Included in this condensed circular are charts showing the recommended temperature and pressure ranges for ten classifications of the firm's pumps—from minus 350 degrees F. to plus 1000 degrees F., and up to 1000 psig. Illustrations and specifications are shown for each. If you would like a copy of this reference booklet,

CIRCLE 14 ON SERVICE CARD

15—ENGINEERING MANUAL

Marlow Pumps' new engineering manual is designed for finding answers quickly to questions regarding pump selection, installation and application. The manual contains 24 pages of indexed information, charts and graphs.

Data contained in this manual are from such sources as various manufacturers' data, engineering handbooks and laboratory tests, as well as from practical experience. To obtain a copy,

CIRCLE 15 ON SERVICE CARD

16—PLASTIC TANK LINER

Flexi-Liner Co. is making data available on its laminated, flexible plastic tank liners. No skilled labor or surface preparation is needed. Suspended from a holding ring inside the top edge of the tank, the liner is unaffected by physical or thermal shock and is independent of expansion or contraction of the tank wall. Each liner is made to fit the tank. To get these data,

CIRCLE 16 ON SERVICE CARD

**Application
Equipment**

17—GAS DRIVEN COMPRESSOR

A compact, heavy-duty air compressor for truck mounted applications is now

being offered by the Wayne Pump Co. Model W6400BGC combines high capacity with small weight and size to fit tight truck dimensional and weight requirements. The unit is rated at 175 PSI and delivers 32.5 CFM of air when operating at full ratings. Designed as a self-contained "off road" package, the engine drive is V-belted to the compressor through an oil type clutch which permits warm-up operations. Additional details and information are available by

CIRCLING 17 ON SERVICE CARD

**18—NYLON FLAT
SPRAY NOZZLE**

A new nylon flat spray nozzle for the application of all agricultural chemicals has been introduced by Delavan Manufacturing Co. This tip will be made in a range of sizes from 5 GPA to 100 GPA and in 65-, 73- and 80-degree spray angles for different spraying heights. It is completely corrosion resistant and has better wear characteristics than either brass or aluminum. Complete information is given in a bulletin which you may have by

CIRCLING 18 ON SERVICE CARD

19—TYLER SPREADERS

Tyler Manufacturing Co.'s fertilizer spreader has a spreading capacity of 30-60 acres per hour. Of 14 gauge welded steel body, it holds 2½ tons and has extensions for handling four tons. The wheel-driven conveyor belt allows shifting of tractor transmission without affecting rate of application. No clutches are involved. Complete details are available; just

CIRCLE 19 ON SERVICE CARD

**20—LIQUID FERTILIZER
FARM WAGONS**

Prior Products, Inc. will send you data on its Ranger wagons, liquid fertilizer farm wagons. They incorporate patented Linco "Level-Load" axle and have a low center of gravity. These wagons insure safety by preventing stresses that rupture tank seams. For your data

CIRCLE 20 ON SERVICE CARD

Miscellaneous

21—"080" FILTER REGULATOR

A 2-page bulletin describing the recently introduced "080" filter regulator has been issued by Rockwell Manufacturing Co. It is constructed of pressure die cast aluminum and has a maximum inlet pressure of 250 psi with outlet pressure ranges of 0-5, 5-35, 35-100 psi. The bulletin includes a typical performance curve,

construction specifications, applications and a cutaway drawing. For a copy of the bulletin,

CIRCLE 21 ON SERVICE CARD

22—ADP SYSTEM REPORT

A special report on automatic data processing by the electronic system has just been released by Motivation, Inc. This 7-page report includes a complete list of ADP manufacturers, the type of system they produce and a representative price range for each system. This compilation points out the internal changes which one must consider if the decision has been made to add automatic data processing as a management tool. Questions are answered which will acquaint the reader with the pitfalls and advantages of such a system. To get this report,

CIRCLE 22 ON SERVICE CARD

23—RESOLITE CR PANELS

An 8-page booklet describes in detail the advantages and applications of Resolite Corp.'s corrosion resistant material for application in chemical environments. The panels, made of a type of plastic, derive their corrosion-resistant property from specially formulated polyester resins. The panels are suitable for use in either interior or exterior situations.

CIRCLE 23 ON SERVICE CARD

**24—PRODUCTION INDICATION
INDUSTRIAL SCALE**

Toledo Scale, division of Toledo Scale Corp., announces its new projection indication industrial scale. Model 1070 provides instant reading with no oscillation. There is a choice of six avoirdupois or metric charts with capacities up to 30 pounds and 15 kilograms, respectively. Both single- and double-end shoe scoops are available as accessories. The scale housing is finished in aluminum hammer-tone, and it measures 15-¼" wide, 20-½" deep and 23½" high. A bulletin giving more information may be had by

CIRCLING 24 ON SERVICE CARD

**25—LABORATORY BALANCES
AND WEIGHTS**

Ohaus Scale Corp.'s new catalog illustrates its complete line of precision weights and scales, as well as its new moisture determination balance. Product class includes Harvard trip, triple beam, centogram, even arm solution heavy-duty solution and special purpose balances. To get your free copy,

CIRCLE 25 ON SERVICE CARD

26—DATA ON GLASTEEL

The Pfaudler Co., division of Pfaudler-Permutit, Inc., has recently released its bulletin on Glasteel. The 20-page, full color volume details the steps in manufacture, physical and chemical properties and end-use of Glasteel.

One section is devoted to differentiating between the types of "high voltage," "low voltage" and "visual" Glasteel that are available for varying service conditions. The information is presented in table form. A technical data section discusses operating temperatures, thermal shock, heat transfer, testing facilities and resistance to acids and alkalis. A copy may be obtained by

CIRCLING 26 ON SERVICE CARD

NEWS OF THE INDUSTRY

EZEE-FLOW CHEMICAL APPLICATOR



The Ezee-Flow Div. of AVCO Distributing Corp., has made available a new granular type of chemical applicator for herbicides and insecticides. The Protecto-Zone applicator presents features that enable accurate metering and application of granular insecticides and herbicides. These two chemicals can be applied at the same time or singly.

Other features are even-flow power feed action, a shut-off that stops chemicals from flowing when planter is raised, corrosion-proof shutters and two types of hoppers.

To obtain more information,
CIRCLE 32 ON SERVICE CARD

WESTVACO 4-PLY TAPE CLOSURE

A four-ply kraft tape closure called ImpacTape, which is said to double the impact resistance of sewn-end multiwall bags, has been developed by West Virginia Pulp and Paper Co. The closure consists of a piece of kraft tape, the edges of which have been folded under the sewing line with the needle passing through four layers of the tape instead of the conventional two layers. The inward fold of the tape cushions the sewing line against sudden shock.

The company is strengthening its Multiwall Bag Div. by consolidating the sales organization on a divisional basis and launching a market development program. Jason M. Elsas, presently manager of the division's Southern Region, will

fill the new position of sales manager of the entire division. Sheldon Y. Carnes, manager of the Northern region, will be market development manager. Carnes will develop new markets for multiwall products and explore market potential of new products in this field.

BULK HANDLING, STORAGE METHODS STUDIED

A study aimed at helping fertilizer dealers determine the economics and methods of getting into bulk storage and handling of solid

fertilizers is being made by Spencer Chemical Co. Dr. Balser, Spencer's product and marketing manager for solid fertilizers, said that this increased interest in the possible economics of handling bulk solids prompted the firm to set up dealer-type bulk storage and handling facilities at Lawrence, Kansas and Marion, Ill. Both installations are 68-ton capacity overhead "Butler" bins. Using its "Mr. N" ammonium nitrate for the tests, no major storage or handling problems have been encountered after a season's use.

NOW! YOU CAN BECOME A FERTILIZER MANUFACTURER

**DOUBLE
YOUR
PROFITS**

*New Functional Design
Cuts Cost For Liquid Plants*

LIQUID OR GRANULAR BLEND, we can supply a plant to fit your requirements with a profit planned operation.

★ Balanced Liquid Fertilizer plant (pictured)
★ Agri-Blend granular plant

... both plants of revolutionary NEW design.

★ The cost? Less than you think!
... or you can lease the plant of your choice.

FOR DETAILS SEND
FOR FREE BROCHURE

AGRICULTURAL BUSINESS COMPANY, INC.

BOX 36 . . . LAWRENCE, KANSAS

Suppliers Briefs

NEW PEARL-WHITE PAIL HANDLE

Designed to glamorize the merchandising appeal of steel pails, and at the same time reducing scratching and marring of pail surfaces during shipping and handling, a new, pearl-white plastic handle has been developed by Vulcan-Associated Container Companies, Inc. The plastic grip is said to lessen contact between adjacent containers and acts as a shock-absorber.

The pigment-free polyethylene grip is standard equipment on all Vulcan pails at no extra cost. It is designed with nine tiny air cells and acts as a cushion to the hands when lifted. It will not crack or splinter.

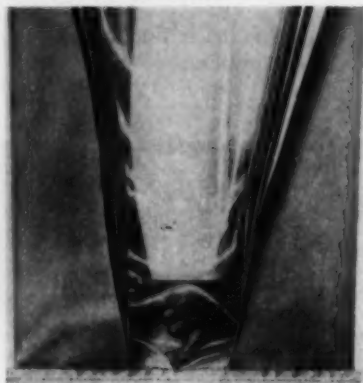
PURITAN APPOINTS WINER AND DALEY TO EXEC. POSTS

Appointment of Joseph J. Winer to the newly-created post of assistant-to-the-president and assistant treasurer of Puritan Aerosol Corp. was announced by Harvey White, president. Formerly comptroller, Winer is in charge of purchasing and customer service. The latter responsibility includes as-

sisting customers in solving problems associated with filling and marketing a new aerosol product.

Richard H. Daly succeeds Winer as comptroller in which capacity he will be responsible for supervision of office personnel, and he will assist management in creating new accounting systems, including cost control and inventory control.

MPS RAYMOND BAG



A combination of the features of an independent polyethylene tube and a multiwall paper shipping sack has been accomplished by Raymond Bag Corp. Designated as MPS (Multiwall Perfect Seal), it combines a completely seamless polyethylene tube as part of the multiwall, sewn and heat sealed above the sew-line. The liner can-

not pull out or slip and makes a production line package that can be filled by existing equipment.

DODGE & OLCOTT MOVES TO NEW LOCATION

Dodge and Olcott, Inc. announces the removal of its general offices and laboratories to: Manhattan Industrial Center, 75 Ninth Avenue, New York 11, New York. These quarters, furnished with completely new and modern laboratories and facilities, represent one of the few moves of the company since it was established in 1798.

GILMAN PAPER APPOINTS GRAY TO NEW POST

Howard Gilman, executive vice president of Gilman Paper Co., announced the appointment of Malcolm Gray to the new post of manager of trade relations, effective immediately. His primary activities will be to investigate raw materials, their uses and potentials within Gilman's pulp and paper manufacturing and converting operations and to study applications of such developments with companies that serve or are served by Gilman.

RICHARDSON SCALE NAMES NEW MANAGER

John LeMay has been appointed manager of industry development for Richardson Scale Co. In this newly-created position he will act as coordinator of sales activities within industries serviced by Richardson, and he will supervise planned marketing of Richardson systems for both custom and standard products.

Within specific customer industries LeMay will cover marketing, promotion, equipment standardization, product design guidance and research and development guidance.

HALL NAMED PRESIDENT OF CHEMTREE CORP.

William C. Hall has become president and a director of Chemtree Corp. Formerly president of Arboreal Associates, Inc. which was purchased by Chemtree, Hall has been in the field of arboriculture and horticulture for the past 29 years.

CENTURY

SELF-

PROPELLED
SPRAYERS



Sprayer rental is a profitable service offered by many fertilizer and ag chemical dealers. Whether you charge equipment rental by the hour or by the acre, you profit both from the sale of material and the equipment rental fee.

CENTURY'S self-propelled sprayer gets the job done accurately and without trouble because it is engineered for just such rugged performance. Nylon nozzles handle all chemicals, even liquid fertilizers. So does the 130 gal. fiberglass tank. It works equally well in low or high crops. An inexpensive trailer transports it easily at highway speeds. Find out how CENTURY can help you sell more chemicals and liquid fertilizer by offering sprayer rentals to farmers in your area. Write today for free 30-page information booklet to: CENTURY ENGINEERING CORPORATION, CEDAR RAPIDS, IOWA. Dept. 1548

PATENT REVIEWS

DIGESTER FOR PRODUCING FERTILIZERS

U. S. 2,948,593, issued Aug. 9, 1960 to John David Larson, describes a digester for the production of fertilizers by the fermentation treatment of inorganic materials.

As shown in Fig. 1, the drum 5 is rotated at about four revolutions per hour by motor 11. The feed consists of a mixture of inorganic materials such as granite, limestone, clay, or gypsum, and the organic material may be peat, sewage sludge, or manure, and enters through hopper 14 and screw conveyor 15. A spiral web 22 advances the feed through the rotating drum. Fermentation action is induced by the circulation of air and gases through the drum. The gases enter at a definite temperature at 35, after being heated by heater 36 and humidified by water from pipe 37; they leave at 31, passing through a dehumidifier 34 and re-circulating fan 32.

The product is delivered to a conveyor 29, as shown.

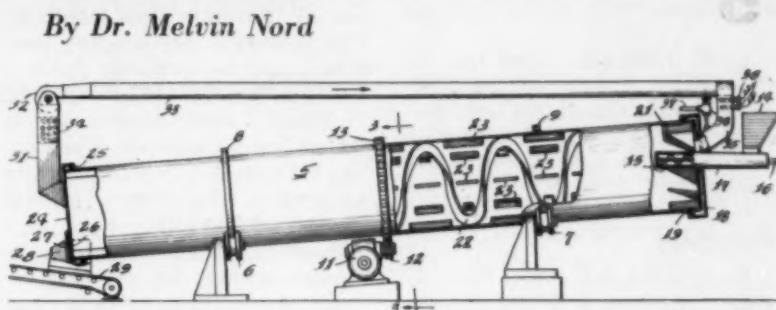


Figure 1

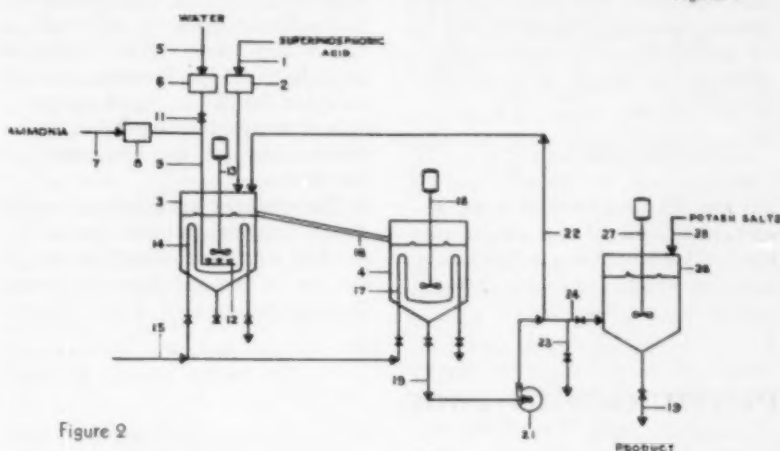


Figure 2

PRODUCTION OF LIQUID FERTILIZERS

U. S. 2,950,961, issued Aug. 30, 1960 to Marcus M. Striplin, Jr., John M. Stinson, and John M. Potts, and assigned to Tennessee Valley Authority, describes a process for making stable liquid fertilizers containing more than 33 per cent total plant food, in which no crystallization or precipitation occurs on long storage.

As shown in Fig. 2, superphosphoric acid is fed through line 1 into a reaction system comprising vessels 3 and 4. Water and ammonia are fed into vessel 3 through lines 5 and 7.

Water and ammonia enter vessel 3 through a spider 12 located near the bottom of vessel 3. Vessel 3 is equipped with a motor-driven agitator running at such speed as to secure rapid and intimate mixing of acid, ammonia, and water, and to keep the resulting mixture in vigorous agitation until reaction is complete. Cooling coils 14 are located within vessel 3.

A stream of superphosphoric acid is introduced at a steady rate

of flow according to the capacity of the equipment, and rates of introduction of water and ammonia are varied to give a specific gravity and pH, respectively, in the desired ranges. The specific gravity ordinarily will be from 1.26 to 1.45 at 80° F. when the pH of the solution is in the preferred range from 5.0 to 6.65. The temperature of the reacting mixture is maintained in the range from about 55° F. to 125° F. by circulating a suitable coolant through coils 14.

The resulting mixture overflows from vessel 3 via line 16 to a second vessel 4 similar to vessel 3. Rapid and intimate mixing by vigorous agitation also is maintained in vessel 4. The resulting solution is drawn off via line 19 and pump 21. A part of this solution is recycled to vessel 3 via line 22.

The purpose of the pair of mixing vessels 3 and 4 is merely to insure thorough and intimate mixing during the entire time necessary for the reaction to go to completion, and to control the temperature accurately.

Finished solution drawn from vessel 4 via line 19 by pump 21

may be withdrawn as product via line 23 when grades of fertilizer such as 11-33-0 or 12-36-0, containing no potash, are desired. The finished solution withdrawn from vessel 4 frequently may be a little offgrade, i.e., it may contain a little less nitrogen than is required for an N:P₂O₅ weight ratio of exactly 1:3. This is due to the fact that ammoniation of the superphosphoric acid to a final pH in the range of 5.0 to 6.65 usually does not furnish quite enough nitrogen for the 1:3 ratio. This slight deficiency of nitrogen may be corrected easily. The solution is led into vessel 26 and sufficient ammonium nitrate or urea is there dissolved in it to bring the ratio up to 1:3. When it is desired to dissolve potash in the solution, the solution is passed via line 24 to vessel 26. Potash is introduced at 28 and is dissolved in the solution by agitation.

HERBICIDES

U. S. 2,951,754, issued Sept. 6, 1960 to John R. Bishop and assigned to Amchem Products, Inc., discloses a method of eradicating undesirable plants with α , β , β' -

PATENTS (Continued)

trichloroisobutyric acid and its derivatives.

U. S. 2,955,125, issued Oct. 4, 1960 to Carl N. Andersen, assigned to Gallowhur Chemical Corp., discloses the herbicidal properties of certain arsono acetaldehyde compounds.

PESTICIDES

U. S. 2,951,785, issued Sept. 6, 1960 to Norman E. Delfel and assigned to Esso Research and Engineering Co., discloses a method for controlling fungus disease on plants, using a fine spray of a specified mineral oil.

U. S. 2,952,583, issued Sept. 13, 1960 to Lois L. Fritts and assigned to The Dow Chemical Co., describes a method for minimizing the incidence of virus infections in a plant, which employs a halogen substituted tolyl benzoate. ▲

PESTICIDES IN 1960

(Continued from page 10)

From all indications in 1960, it appears that research and development costs for the Industry will not go down in 1961, and may continue to rise. As is well known, the wider use of pesticides has been accompanied by demands from non-scientific public bodies for additional research on Industry products. During 1960 the Industry broadened its effort to inform the public on how thoroughly pesticides now are tested and on the adequacy of public protection against possible misuse of the products.

FARMER ATTITUDES STUDIED

In 1960, a survey of farmers' attitudes toward pesticides disclosed that nearly all farmers approved the use of Industry products. Seventy-three per cent said that farmers who use Industry products are "smart" and "successful." Yet, the survey disclosed that most farmers fail to use pesticides to the optimum amount, due to lack of application equipment and for lack of know-how in using the products.

Closing the farmers' "knowledge gap" as disclosed by the survey, offers the Industry an opportunity for a broad expansion of

The 1961 edition of *Using Commercial Fertilizers*, published by The Interstate, printers and publishers, will be available January 3. It is written by Malcolm H. McVickar, chief agronomist at Ortho Div., California Chemical Co. He was formerly chief of agronomic education, National Plant Food Institute.

Fertilizers which have been developed within the past decade, their manufacturing processes and agronomic merits are discussed. An entire chapter is devoted to liquid fertilizers. New chapters have been added covering special uses for fertilizers, fertilizer-pesticide mixtures, fertility-moisture relationships and the economics of fertilizers.

The chapter on fertilizer application equipment has been expanded, and two other new chapters on "Chemical Sources Versus Organic Sources of Plant Nutri-

ents" and "Lease Arrangements Involving Fertilizer Use" offer a picture of fertilizers in present-day agriculture.

A glossary and appendix provide information on fertilizer control laws and regulations of the various states, in addition to an index.

The list price of the book is \$4.75 per copy.

John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. published on October 10, *Modern Insecticides and World Food Production*. Written by F. A. Gunther and L. R. Jeppson, the book costs \$8.50.

This book by two members of the Citrus Experiment Station of the University of California is designed to provide a general and comprehensive insight into the whys and wherefores of modern insecticides and acaricides, the problems of, and arising from, their use.

sales of Industry products in 1961 among people who already are the Industry's best customers.

One moderating influence in 1961 may come with any attempt of the Federal Government to make a drastic cutback in farm surpluses, either by taking land out of production or by limiting off-farm sales. What effect any such program may have cannot be calculated in advance, and may well be partly or completely counterbalanced by the nation's growing awareness of the threat pests pose to our food supplies, our health, and our comfort.

Both the opening up of Africa to wide-scale transportation facilities, and the opening of the St. Lawrence Seaway tend to increase that threat. The former is a potential source of infestations by species of pests new to our country. The latter offers an additional 1400 miles of coastline open to foreign commerce and the possible invasion of pests carried inland with foreign cargoes.

Growing awareness of the need for improved pest control abroad as well as in the United States has been boosting the Industry's exports of many types of pesticides. Value of pesticide exports in the

first half of 1960 totaled over \$47 million compared with \$86 million for all 12 months of 1959. Over half the exports were accounted for by DDT, much of it going into overseas malaria eradication programs. Large amounts of fungicides, fumigants, herbicides, and other insecticides also were exported in the first half of 1960.

Pending any unforeseen developments here or abroad, pesticide sales appear to be headed for additional gains in 1961. Our growing population, the need for more efficient food and fiber production here and abroad, and the trend toward creating a pest-free type of outdoor living are all playing their part in continuing to raise the level of the Pesticide Industry's products.

FARM JOURNAL ISSUES REPORT ON FARM OUTLOOK

On-the-spot reports on the agricultural situation in the fall of 1960 and the outlook for 1961 appear in the latest issue of "What's Ahead in Farming," published semi-annually by *Farm Journal* magazine. The issue includes reports made by departmental and field editors at a recent staff conference. Copies of the publication are available on request from the Editorial Relations Dept., Farm Journal, Inc., Washington Square, Phila. 5, Pa.

By Kelvin Dorward*

Hibernating Boll Weevil Counts High

THROUGH November, reports had been received from three states relative to the fall **boll weevil** hibernation survey. Each of these shows a higher average number of boll weevils in hibernation than in the fall of 1959. Two-square-yard samples of ground trash adjacent to cotton fields were collected and counts made of live weevils in the trash to determine the average number per acre of trash entering hibernation. In the spring of 1961, another survey will be made in the same areas to determine the number of boll weevils that survive the winter.

Collections were made in three northeastern Louisiana parishes (Madison, East Carroll and Tensas) where a total of 90 samples were taken at 30 locations. The average number of boll weevils per acre found was 6,860 in Madison parish, 13,235 in East Carroll parish, and 14,365 in Tensas parish. The average for the tri-parish area was 11,487, as compared with 8,097 live boll weevils found in hibernation during the 1959 fall hibernation survey.

Hibernation records have been made in Madison parish for the past 25 years. During this period, there has been only one fall in which there were more boll weevils found. In 1955, 13,443 weevils per acre were found in Madison parish, compared with the 6,860 this fall.

Three hundred, fifty-four ground trash samples were collected in four Mississippi areas. The average number of live weevils per acre of trash was 12,944 in the lower delta, 20,087 in the central delta, 17,651 in the north delta and 7,651 in the hill section. The 1960 state average was 14,502 live weevils per acre, compared with 5,127 found in the fall of 1959.

In McNairy county, Tennessee, twelve samples of ground trash were collected. An average of 2,622 live weevils per acre of trash was found. This compares with 1,882 found in the fall of 1959.

Greenbugs were collected October 27 for the first time this year

in a field of oats in the Durant area, Bryan county, Oklahoma. By the latter part of November, infestations were found in Jackson, Johnston, Marshall, Noble and Pawnee counties with populations increasing in known infested areas. During the period October 26 to November 7, a greenbug survey was conducted in 25 Texas Panhandle counties. The insect was found in 22 of the counties. Some fields in Potter, Oldham, and Deaf Smith counties averaged 30 greenbugs per foot of row. In other areas of the panhandle, populations ranged 1-10 per foot of row and were less numerous in the eastern part of the area.

During the early part of November, heavy populations of the **spotted alfalfa aphid** were present in some alfalfa fields on the Yuma mesa, Yuma county, Arizona. However, by the latter part of the month, populations were on the decrease. In Ada county, Idaho, the aphid was found for the first time. The pest was also found in Jackson county, Idaho—the first record in the southern part of the state. High populations of the spotted alfalfa aphid were reported from Greeley county, Nebraska. Counts approximated 225 per sweep of an insect net. Light populations were reported from California, New Mexico and Oklahoma, with increases noted in the latter state.

The **oriental fruit moth** caused heavy late twig damage on young peach trees in Upshur county, Texas, but by early November overwintering had begun. In Oregon the 1960 survey for the insect was concluded October 10. All fruit-growing areas of the state were trapped and 119 moths collected between May 9 and the conclusion date. The collections were only in the Salem area, with 12 properties being found infested.

Among truck crop insects, aphids

were the most active during November. Early in the month, aphids were heavy locally on turnips and collards in areas of Oklahoma. Carrots and turnips were heavily infested due to a late buildup in Dona Ana county, New Mexico gardens. These insects were on the increase on various truck crops in Sussex and Kent counties, Delaware. Severe infestations of the **beet armyworm** occurred on sugar beets in the El Centro-Niland areas of Imperial county, California. Large blocks seedling beets were destroyed in the county.

Bark beetles were perhaps the most prominent forest insects reported during November. Although activity of these insects was on the decline in eastern Texas, they were responsible for the loss of 10,000,000 board feet of sawtimber and 30,000 cords of pulpwood, in spite of an aggressive control program. In Virginia bark beetles were responsible for loss of trees in localized areas of Northampton and Princess Anne counties.

A moderate infestation of the **Nantucket pine moth** on a Scotch pine plantation of 20,000 3-year-old trees was reported from Pennsylvania. The insect was common on Virginia pine in some areas of Fairfax county, Virginia and heavy on young pines in Camp county, Texas. In Payne county, Oklahoma 6 larvae and 134 pupae were found alive in 250 tips in a pine planting checked. An additional 6 larvae and 9 pupae of the moth were found dead in the tips examined.

Cool weather was responsible for the increase of **house flies** in homes to nuisance proportions in many areas of Oklahoma during November. Flies were also common to heavy around barns and livestock pens in the east central part of the state. **Face flies** were a problem in homes during the warm period of November 14-18 in localized areas of Tippecanoe and Warren counties, Indiana.

* Chief Staff Officer, Survey & Detection Operations, Plant Pest Control Div., Agricultural Research Service, USDA.

INDEX

ARTICLES and AUTHORS

F
C

Your reference to articles appearing in *FARM CHEMICALS* during 1960

MONTH PAGE			MONTH PAGE		
A					
Aerial Dust Drift and Degradation Experiment with Aramite, on Alfalfa Hay	Oct.	60	"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959"	Oct.	62
"Adapting Market Research to Sales Planning"	Feb.	18	Coombs, Garth—"Pesticide Formulation: A Carrier Producer's Viewpoint"	June	72
"Agronomic Selling Yields Profits"	Sept.	31	"Coordinated Fertilizer Marketing in the 60's"	Nov.	20
Agronomically-oriented Fertilizer Dealers: Wanted	Aug.	30	Corley, T. E.—"Pesticide Application Equipment: Its Use, Calibration and Maintenance"	April	33
"Agronomists-Industry Meeting"	Mar.	26	Corrosion Problems, Liquid Fertilizer	July	32
Air Pollution, Solving Problems in Fertilizer Production	Jan.	26	Cotton Insect Control Application Methods	Feb.	58
American Agricultural Chemicals Installs Pneumatic Classifiers	Sept.	60	Creative Design for Multiwalls, Value of Credit Series:	Dec.	22
American Chemical Society, Meeting, Abstracts of Papers from	Sept.	64	"Cash Flow Chart Can Ease the Credit Strain"	June	23
American Phytopathological Society Meeting Discusses New Chemicals	Oct.	40	"Credit Mess"	May	22
Ammonia Plant Serves U. K. Markets	May	58	"Credit Training for Dealers"	Sept.	22
Ammonium Nitrate, Fisons New Plant for Application, Granular Herbicides	Feb.	60	Part I	Oct.	22
"Application of Liquid Fertilizers"	Jan.	43	Part II	July	20
"Application Methods for Cotton Insect Control"	Mar.	39	"Disorganization"—A Credit Problem	Aug.	26
"Applying Wettable Powder Herbicides"	Feb.	58	"Middle Market", Reaching		
"Applying Wettable Powder Herbicides"	July	34	Crolius, Peter C.—"Are Your Pricing Policies Within the Law?"	Dec.	38
"Aramite Aerial Dust Drift and Degradation Experiment on Alfalfa Hay"	Oct.	60	Custom- vs. Farmer-Application of Liquid Fertilizers	Mar.	39
"Are Marketing Costs Expense or Investment?"	Mar.	28	D		
"Are Your Pricing Policies Within the Law?"	Dec.	38	D'Ambry, Robert W.—"Stretch Bags Reduce Packaging Costs"	Feb.	27
Arnold, W. W.—"Liquid Fertilizer Corrosion Problems"	July	32	Danielson, L. L.—"Needed: Ideas for Suitable Field Application of Granular Herbicides"	Jan.	43
Ashkum Fertilizer Company Changes its Packaging	June	42	Danielson, L. L.—"Granular Herbicides"	Mar.	62
August Rainfall Prospects	July	26	Davis, Marion M.; Scholl, Walter; Fox, Esther I.; Wilker, Caroline A.—"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959" Preliminary Report	Mar.	68
B			Davis, Marion M.; Scholl, Walter; Wilker, Caroline A.—"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959," Part I	Oct.	62
BHC, High Gamma, Stauffer Process for	Oct.	44	Dealers, Credit Training for (Part I)	Sept.	22
Bacillus Thuringiensis Berliner, Use in California	Oct.	26	Dealers, Credit Training for (Part II)	Oct.	22
Beal, George M.; Bohlen, Joe M.; Hobbs, Daryl J.—"Farmer Purchasing Patterns for Pesticides"	Oct.	32	Dealer Meetings, How to Hold	Feb.	26
"Beat the Competition . . . With Service"	Feb.	22	"Demonstrate with Showmanship"	April	14
Bernard, Paul—"Your Herbicide Customer"	Mar.	34	"Diagnostic Techniques Put Research Findings into Action"	Feb.	52
Blake, George H., Jr.—"How to Calculate Pesticide Dilutions"	April	64	Dilutions, Pesticide, How to Calculate	April	64
Bohlen, Joe M.; Beal, George M.; Hobbs, Daryl J.—"Farmer Purchasing Patterns for Pesticides"	Oct.	32	Disease, Plant, Predicting	May	20
Brand Name, Exhibits Help Build	April	30	"Disorganization"—A Credit Problem	July	20
"Brush Control Ups Conifer Production"	June	48	Doane Herbicide Market Survey—"How Market Research Can Work for You"	Jan.	23
Bulk Containers and Unit Loads	Aug.	36	Part I	Feb.	30
Buyer Characteristics, Why Study	Dec.	16	Part II	July	54
C			"Dollars and Cents of Range and Meadow Fertilization"	May	14
Calibration and Maintenance, Pesticide Application Equipment	April	33	"Dominant Buying Motive," Sell to the	Oct.	16
California Fertilizer Conference Report	June	40	Drift and Degradation Experiment with Aramite Aerial Dust on Alfalfa Hay	Oct.	60
"Cal spray Opens New Kennewick Facilities"	June	69	E		
"Canada Packers, Limited, Re-equips for Granulation"	Nov.	36	Earl, Charles—"Packaging Change Over at Ashkum"	June	42
"Cash Flow Chart Can Ease the Credit Strain"	June	23	Engdahl, R. B., and Sachs, G. F.—"Solving Air Pollution Problems in Fertilizer Production"	Jan.	26
Charles, Hoyt and McHenry, Charles R.—"Monitoring Fluoride Content of Air, Water and Vegetation"	Aug.	58	Enthusiasm, Magic of	Sept.	14
"Chemical Residues"	May	55	Entomological Society of America, North Central Branch, Meeting Report	May	55
"Compacting Fertilizer Salts"	Mar.	58			
"Computer 'Runs' Ammonia Plant"	Nov.	32			
Conifer Production, Brush Control Increases	June	48			
"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959," Preliminary Report	Mar.	68			

	MONTH	PAGE
Entomological Society of America, Southeastern Branch Meeting Report, Insect Investigations.	Mar.	57
<i>Everett, Ralph</i> —"Sell A Mental Concept"		
Part I	Aug.	24
Part II	Sept.	26
"Exhibits Help Build Your Brand Name"	April	30

F

Farm Chemicals Marketing Seminar, Advance Information	Nov.	30
Farm Chemicals Marketing Seminar Pictorial	Dec.	10
Farm Chemicals Marketing Seminar Report	Dec.	24
"Farmer Purchasing Patterns for Pesticides"	Oct.	32
<i>Farrar, Larston D.</i> —"SBA Loan Facts"	Aug.	38
Fertilization, Meadow and Range	July	54
Fertilizer Industry Round Table Report	Dec.	30
Fertilizer, Liquid, the Status of	Mar.	60
Fertilizer Marketing, Coordinated, in the 60's	Nov.	20
Fertilizer Merchandising, Thirteen Ways You Can Improve	July	25
Fertilizer Salts, Compacting	Mar.	58
"Fertilizer Situation for 1959-60"	April	60
Fertilizers, Commercial, and Primary Plant Nutrients, Consumption of in the United States, Year Ended June 30, 1959, Preliminary Report	Mar.	68
Fertilizers, Commercial, and Primary Plant Nutrients, Consumption of in the United States, Year Ended June 30, 1959	Oct.	62
"Fire Spurred Us to More Efficiency"	Sept.	38
"Fisons New Ammonium Nitrate Plant"	Feb.	60
Flannel-board, Use of at Sales Meetings	Mar.	36
Fluoride Content of Air, Water and Vegetation, Monitoring	Aug.	58
Formulation, Pesticide: A Carrier Producer's Viewpoint	June	72
"Four Steps to Good Sales Meetings"	Jan.	24
<i>Fox, Esther, I.; Scholl, Walter; Davis, Marion M.; Wilker, Caroline A.</i> —"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959, Preliminary Report"	Mar.	68
<i>Freston, T. E.</i> —"Fire Spurred Us to More Efficiency"	Sept.	38
"Fume Control in Superphosphate Manufacture"	July	29

G

<i>Garman, Dr., Willard H.</i> —"Touring the Rothamsted Station"	Nov.	62
<i>Graham, Charlotte A.; Shepard, Harold H.; Mahan, John N.</i> —"The Fertilizer Situation for 1959-60"	April	60
"Granular Herbicides"	Mar.	62
Granulation, Canada Packers, Limited Re-equip for	Nov.	36
"Grinding Pesticides"	May	57
<i>Grindrod, J.</i> —"New Ammonia Plant Serves U. K. Market"	May	58
"Fisons New Ammonium Nitrate Plant"	Feb.	60

H

<i>Hartler, F. E.</i> —"Cash Flow Chart Can Ease Credit Strain"	June	23
—"Credit Training for Dealers" (Part I)	Sept.	22
—"Credit Training for Dealers" (Part II)	Oct.	22
—"Disorganization"—A Credit Problem	July	20
—"Four Steps to Good Sales Meetings"	Jan.	24
—"How to Hold Dealer Meetings That Pay"	Feb.	26
—"Middle Market," Reaching	Aug.	26
Helicopter, Spraying by	April	40
Herbicides, Granular	Jan.	43
Herbicides, Granular	Mar.	62
Herbicides, Wettable Powder, Applying	July	34

JANUARY, 1961

<i>Hobbs, Daryl J.; Bohlen, Joe M.; Beal, George M.</i> —"Farmer Purchasing Patterns for Pesticides"	Oct.	32
<i>Hovland, Arley</i> —"Predicting Plant Disease"	May	20
"How to Ask for the Order and Get It"	Jan.	15
"How to Be A Constructive Critic of Your Present Marketing Program"	Jan.	18
"How to Build Sales Like Sixty in '60"	Mar.	36
"How to Calculate Pesticide Dilutions"	April	64
"How to Hold Dealer Meetings That Pay"	Feb.	26
"How Market Research Can Work For You"		
Part I	Jan.	23
Part II	Feb.	30
Part III	Mar.	34
"How We Measure Profits"		
Part I	Nov.	26
Part II	Dec.	20

I

Industry, Agronomists Meeting	Mar.	29
Insect Control on Cotton, Application Methods for	Feb.	58
"Insect Investigations"	Mar.	57
International Minerals & Chemical Customer Advisory Panel	June	31
International Minerals & Chemical Corp. Studies		
Production Problems	Oct.	45
Iowa Fertilizer Dealers' Short Course Report	Feb.	50

J

July Rainfall Prospects	June	26
June Rainfall Prospects	May	28

K

<i>Klaus, Erwin H.</i> —"What Is A Fair Price?"	Mar.	22
"Knowledge Makes the Difference!"	June	18

L

<i>Lauterbach, P. G.</i> —"Brush Control Ups Conifer Production"	June	48
<i>Lazo, Hector</i> —"Are Marketing Costs Expense or Investment?"	Mar.	28
—"Coordinated Fertilizer Marketing in the 60's"	Nov.	20
—"How to be a Constructive Critic of Your Marketing Program"	Jan.	18
—"Marketing Patterns for '61"	Dec.	24
—"10 Obstacles to Scientific Marketing"	June	34
"Let's Talk Pesticide Benefits"	Nov.	28
<i>Lipps, Roy C.</i> —"Dollars and Cents of Range and Meadow Fertilization"	July	54
Liquid Fertilizers, Application of Farmer-vs. Custom	Mar.	39
"Liquid Fertilizer Corrosion Problems"	July	32
Liquid Fertilizer, the Status of	Mar.	60
Loan Facts, Small Business Administration	Aug.	38
<i>Lockwood, Paul</i> —"New Tax Reporting"	Aug.	35

M

"Magic of Enthusiasm"	Sept.	14
"Magruder Check Fertilizer Sample Program and its Relation to Plant Operation"	Aug.	56
<i>Mahan, John N.; Shepard, Harold H.; Graham, Charlotte A.</i> —"The Fertilizer Situation for 1959-60"	April	60
<i>Mahoney, Bill</i> —"Radio Speaks Simplot Customer Service"	Nov.	58
Maintenance and Calibration, Pesticide Application Equipment	April	33
"Make Full Use of Credit Facilities"	June	40
Market Research, Adapting to Sales Planning	Feb.	18
Marketing Costs: Expense or Investment?	Mar.	28
Marketing, Fertilizer, Coordinated, in the 60's	Nov.	20
Marketing Patterns for '61	Dec.	24
Marketing Program, How to be a Constructive Critic of Your	Jan.	18
"Marketing Research and its Importance to Farm Chemicals Manufacturers"	April	24

49

INDEX

	MONTH	PAGE
Marketing, Scientific, 10 Obstacles to	June	34
May Rainfall Prospects	April	19
McHenry, Charles R., and Charles, Hoyt— "Monitoring Fluoride Content of Air, Water and Vegetation"	Aug.	58
Meadow and Range, Fertilization	July	54
Meadows, M. W.—"New Chemicals for Weed Control"	Jan.	48
Meetings, Dealer, How to Hold	Feb.	26
Meetings, Sales	Jan.	24
Merchandising, Fertilizer, Thirteen Ways You Can Improve	July	25
Merrett, O. C.—"Dominant Buying Motive," Sell to the	May	14
—"Don't Play With Price"	Oct.	16
—"Knowledge Makes the Difference"	June	18
—"Magic of Enthusiasm"	Sept.	14
—"Organize Your Time"	Aug.	18
—"Plug Up the Leaks in Your Sales Plan"	July	14
—"Stop Letting Objections Shake You Up"	Nov.	14
—"Why Study Buyer Characteristics?"	Dec.	16
"Middle Market," Reaching	Aug.	26
Midwestern Meeting of Agronomists and Fertilizer Industry Representatives, Report	Mar.	26
Mississippi Delta Pilot Weather Project	Feb.	36
Missouri Research Progress and its Importance to the Fertilizer Industry	Dec.	60
"Monitoring Fluoride Content of Air, Water and Vegetation"	Aug.	58
Monsanto's Barton Ammonia Plant, Computer "Runs"	Nov.	32
Monsanto Organizes an Agricultural Chemicals Div.	Oct.	38
Multiwalls, Creative Design, Value of	Dec.	22

N

National Agricultural Chemicals Association Convention	Oct.	14
National Agricultural Chemicals Association Convention Report	Nov.	28
National Fertilizer Solutions Association Convention Report	Dec.	10
National Plant Food Institute's Convention Advance	June	28
National Plant Food Institute's Convention Report	July	22
"Needed: Ideas For Suitable Field Application of Granular Herbicides"	Jan.	43
"Needs of Agriculture Discussed at Southeastern Fertilizer Conference"	Nov.	49
Nelson, W. L., and Reed, Fielding J.—"Diagnostic Techniques put Research Findings into Action"	Feb.	52
"New Ammonia Plant Serves U. K. Markets"	May	58
"New Chemicals and Treatments"	Oct.	40
"New Chemicals for Weed Control"	Jan.	48
"New Developments in Phosphates Discussed at Round Table"	Dec.	30
"New PE Compound Cuts Coating Weights in Half"	May	32
"New Process to Provide Nitrate of Potash"	Aug.	42
"New Tax Reporting"	Aug.	35
Nitrate of Potash, New Process to Provide	Aug.	42
Nitrogen: Estimated Supply—1959-60	April	60
"Northeastern Fertilizer Conference at Hershey"	Nov.	18
Northeastern Weed Control Conference, Abstracts of Papers	Jan.	28

O

Objections, How to Handle Sales	Nov.	14
October Rainfall Prospects	Sept.	24
"Olin Mathieson Dedicated Pasadena Plant"	June	70
"Organize Your Time"	Aug.	18
"Organizing for Marketing Action"	Sept.	20
Orth, Leo, Dr.—"Wanted: Agronomically-oriented Fertilizer Dealers"	Aug.	30

MONTH PAGE

P

"Packaging Change Over at Ashkum"	June	42
Packaging: "New PE Compound Cuts Coating Weights in Half"	May	32
Packaging Operation, Shell Streamlines its	Nov.	60
Packaging, Stretch Bags Reduce Costs	Feb.	57
Packaging: What's Ahead	May	30
Parseghian, Manuel H.—"Marketing Research and its Importance to Farm Chemicals Manufacturers"	April	24
Pest Control with Thiricide	Oct.	26
"Pesticide Application Equipment, Its Use, Calibration and Maintenance"	April	33
Pesticide Dilutions, How to Calculate	April	64
"Pesticide Formulation: A Carrier Producer's Viewpoint"	June	72
"Pesticide Situation for 1959-60"	May	36
Pesticide, Thiodan is Broad Spectrum	Mar.	64
"Pesticide Carryover Stocks in 1959"	Mar.	53
Pesticides, Grinding	May	57
Pesticides, Purchasing Patterns for	Oct.	32
Phosphate: Estimated Supply—1959-60	April	60
Phosphate, Reclamation with Pneumatic Classifiers	Sept.	60
Phosphoric Acid, Wet Process, Use in Complete Liquids	April	69
Plant Disease, Predicting	May	20
"Plug up the Leaks in Your Sales Plan"	July	14
"Pneumatic Classifiers Reclaim Phosphate"	Sept.	60
Pollock, Ted—"Beat the Competition with Service"	Feb.	22
—"Demonstrate with Showmanship"	April	14
—"How to Ask for the Order and Get It"	Jan.	15
—"Turning Complaints into Extra Sales"	Mar.	18
Pollution, Air, Solving Problems in Fertilizer Production	Jan.	26
Polyethylene Compound Cuts Coating Weights in Half	May	32
Potash: Estimated Supply—1959-60	April	60
"Predicting Plant Disease"	May	20
Price, Don't Play with	Oct.	16
Price, What is a Fair	Mar.	22
Primary Plant Nutrients, and Commercial Fertilizers, Consumption of in the U. S., Year Ended June 30, 1959, Preliminary Report	Mar.	68
Complete Report	Oct.	62
Production of Major Pesticidal Chemicals, 1957-59	May	36
Profits, How We Measure		
Part I	Nov.	26
Part II	Dec.	20
Publicity, Writing	May	24
Purchasing Patterns for Pesticides	Oct.	32

R

"Radio Speeds Simplot Customer Service"	Nov.	58
Rainfall Probability Maps—May	April	19
June	May	28
July	June	26
August	July	26
September	Aug.	28
October	Sept.	24
Reed, Fielding J. & Nelson, W. L.—"Diagnostic Techniques put Research Findings into Action"	Feb.	52
Renick, Murray—"Thirteen Ways You Can Improve Fertilizer Merchandising"	July	25
"Research Program in Missouri and its Importance to the Fertilizer Industry"	Dec.	60
Residues, Chemical, ESA Panel Discusses	May	55
Riley, J. A.—"Weather Program for Agriculture"	Feb.	36
Robinson-Patman Act, Its Meaning for the Industry	Dec.	38
Rothamsted Station, Touring the	Nov.	62

S

"SBA Loan Facts"	Aug.	38
Sachsel, G. F. & Engdahl, R. B.—"Solving Air Pollution Problems in Fertilizer Production"	Jan.	26

	MONTH	PAGE
S		
Salesmanship, Successful, Series		
"Beat the Competition . . . with Service"	Feb.	22
"Demonstrate with Showmanship"	April	14
"How to Ask for the Order and Get It"	Jan.	15
"Turning Complaints into Extra Sales"	Mar.	18
Sales Meetings, Four Steps to Good	Jan.	24
Sales Planning, Adapting Market Research to	Feb.	18
Salesense Series—"Don't Play with Price"	Oct.	16
"Knowledge Makes the Difference!"	June	18
"Magic of Enthusiasm"	Sept.	14
"Organize Your Time"	Aug.	18
"Plug up the Leaks in Your Sales Plan"	July	14
"Sell to the Dominant Buying Motive"	May	14
"Stop Letting Objections Shake You Up"	Nov.	14
"Why Study Buyer Characteristics?"	Dec.	16
"Same Leaders . . . Different Roles"	Mar.	32
Sample Program, Magruder, and its Relation to Plant Operation	Aug.	56
Sargent, John R—"Adapting Market Research to Sales Planning"	Feb.	18
Sasser, Ralph—"Application of Liquid Fertilizers"	Mar.	39
Scholl, Walter; Davis, Marion M.; Fox, Esther I.; Wilker, Caroline A.—"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year ended June 30, 1959", Preliminary Report	Mar.	68
Scholl, Walter; Davis, Marion; Wilker, Caroline A.—"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959"	Oct.	62
"Seeing is Believing" is Agro Forestry Theme	Nov.	48
"Sell A Mental Concept"		
Part I	Aug.	24
Part II	Sept.	26
Selling, Agronomic, Yields Profits	Sept.	31
September Rainfall Prospects	Aug.	28
Shell Chemical Co., Ltd., Opens New NH ₃ Plant in England	May	58
"Shell Streamlines its Packaging Operation"	Nov.	60
Shepard, Harold H.; Mahan, John N.; Graham, Charlotte A.—"The Fertilizer Situation for 1959-60"	April	60
Simplot Customer Service Speeded by Radio	Nov.	58
Slack, A. V.—"The Status of Liquid Fertilizer"	Mar.	60
"Solving Air Pollution Problems in Fertilizer Production"	Jan.	26
"Spraying by Copter"	April	40
"The Status of Liquid Fertilizer"	Mar.	60
"Stauffer Chemical's High Gamma BHC Process"	Oct.	44
"Stretch Bags Reduce Packaging Costs"	Feb.	57
Sulphur Institute, The, Formed—"Same Leaders . . . Different Roles"	Mar.	32
"Sulfur (Institute) Story"	April	22
Superphosphate Manufacture, Fume Control in	July	29
T		
"10 Obstacles to Scientific Marketing"	June	34
Tax, Reporting	Aug.	35
"Thiodan . . . Broad Spectrum Pesticide"	Mar.	64
"Thirteen Ways You Can Improve Fertilizer Merchandising"	July	25
"Thuricide-New Dimension in Pest Control"	Oct.	26
Timber Production, Brush Control Increases	June	48
"To Better Serve the Industry"	June	31
"Touring the Rothamsted Station"	Nov.	62
"Turning Complaints into Extra Sales"	Mar.	18
U		
"Unit Loads and Bulk Containers"	Aug.	36
"Using Wet Process Phosphoric Acid to Make Complete Liquids"	April	69
V		
"Value of Creative Design for Multiwalls"	Dec.	22
Vanderhoeck, Paul—"Pneumatic Classifiers Reclaim Phosphate"	Sept.	60
"Views from a Cross Section of Industry Leaders"	June	32

	MONTH	PAGE
W		
"Wanted: Agronomically-oriented Fertilizer Dealers"	Aug.	30
"Weather Program for Agriculture"	Feb.	36
Webb, Robert L.—"Fume Control in Superphosphate Manufacture"	July	29
Weed Control, Abstracts from Papers on	Jan.	28
Weed Control, New Chemicals for	Jan.	48
"Western Agricultural Chemicals Association Meets, Names Weldon President"	Nov.	47
Wet Process, Phosphoric Acid, Use in Complete Liquids	April	69
"What Makes a Dealer Successful?"	Feb.	50
"What is a Fair Price?"	Mar.	22
"What's Ahead in Packaging?"	May	30
"What's Your Problem?"	Oct.	45
"Why Study Buyer Characteristics?"	Dec.	16
Wilhelm, Jr., R. M.—"Thiodan . . . Broad Spectrum Pesticide"	Mar.	64
Wilker, Caroline A.; Scholl, Walter; Davis, Marion M.; Fox, Esther I.—"Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States, Year Ended June 30, 1959", Preliminary Report	Mar.	68
Wilkes, Lambert H.—"Application Methods for Cotton Insect Control"	Feb.	58
Wilmington Fertilizer Company Installs New Equipment	Sept.	38
Woodruff, C. M.—"Research Progress in Missouri and its Importance to the Fertilizer Industry"	Dec.	60
"Write Publicity That Sells"	May	24
Y		
"Your Herbicide Customer"	Mar.	34

PLENTY OF TRUTH TO THOSE FISH STORIES AT THE POINSETTIA BEACH HOTEL

another of the great



Write for descriptive folder

Fort Lauderdale is world-famous for its sporty game fishing grounds, and Poinsettia Beach Hotel for its wonderful facilities, luxurious accommodations and homelike atmosphere. Bathing right from your room on the world's most beautiful beach. All sports and recreation "around the corner from everything."



FORT LAUDERDALE, FLORIDA

TECHNICAL REVIEW

► *When the American Society of Agricultural Engineers met recently in Memphis, many papers of interest to the farm chemicals industry were presented.*

► *Here are highlights of talks on control of cotton boll weevils and bollworms, pesticide drift and residue, applying high fertilizer rates, and corn planting.*

Effective control of cotton boll weevils and bollworms can be maintained with low rates of total spray material applied with simple nozzle arrangements. This is the conclusion reached by Lambert Wilkes, agricultural engineer at Texas A & M College. Mr. Wilkes spoke at the winter meeting December 5 in Memphis, Tenn., of the American Society of Agricultural Engineers.

He said control of these insects can be as effective with low rates and simple nozzles as with higher rates and complicated nozzle arrangements, provided the same amount of ingredient is used.

The engineer said boomless nozzles have not proved to be satisfactory for application of insecticides in cotton. Primary reason has been attributed to the large spray droplets obtained with these nozzles.

Preliminary results with an airfoil type nozzle shows promise of being an effective method for application of insecticides for cotton insect control, Mr. Wilkes said.

Experiments with an air delivery type sprayer indicates that rates of 30 gallons per acre are required to give comparable control of these insects when compared with conventional nozzles.

Planting corn in wheel tracks can increase yield from 5 to 15 per cent. The higher yield can be traced to improved conditions for germination and early growth, more effective weed control, increased capacity for moisture retention and absorption, and a decrease in root damage through reduced cultivation.

These were the points made by Kenneth R. Weber, project engineer, Allis Chalmers Manufacturing Company, La Crosse, Wis. Weber pointed out that chemical weed control operations worked in well with the wheel track planting operation and that time consumed by tillage operations, especially seed bed preparation and cultivation, can be reduced by 40 per cent.

"With the development of a planter equipped with an adjustable hitch and packer wheels, a farmer can plant in the usual fashion—or in the wheel track on two wide, or four narrow, or four conventional rows," he said.

Planting in the tracks of the two tractor rear wheels is not practical, Mr. Weber believes, because planting is restricted to a two-row operation and planters, cultivators, and harvesters must be modified to operate on such rows.

Increasing use of high fertilizer rates is posing a challenge to agricultural engineers—that of designing precision fertilizer placement equipment to prevent crop damage. J. G. Futral, head of the agricul-

tural engineering department, Georgia Experiment Station, Experiment, reported:

"Commercial fertilizer hoppers may vary as much as 50 per cent in their output rate even when a uniform material is used," Futral said. "An experimental planter developed in Canada suggested a design for satisfactory metering hoppers. The completed unit has proved to be easy to load and has cut in half the time required to put out complicated fertilizer tests. The largest error yet found for any increment of row is two per cent."

Mr. Futral also described a liquid fertilizer unit designed on a piston and cylinder principle.

The Georgia engineer recommended that fertilizer openers be mounted so that any variation of the distance from the fertilizer band to soil and to the seed is held to a minimum. He said that good results have been obtained in heavy clay soils by the use of curved openers which provide considerable suction.

He also recommended that planters be mounted separately so that variations in the angle of the tool bars caused by pressure do not affect the depth of planting.

Drift and residue of pesticides are two ever present problems with which today's farmer must contend. However, two California scientists say that much can be done to control drift of the chemicals during application and to reduce residue problems.

Norman B. Akesson and Wesley E. Yates, associate professors of agricultural engineering at the University of California, Davis, reported that some chemicals have drifted as far as 22 miles during application.

Akesson and Yates listed four main points to consider in controlling insecticide drift and residue.

(1) Several materials function best as dusts and poor control may occur when a spray formulation is used.

(2) Whenever chemicals are likely to drift, spray equipment should be of a type that gives a medium to coarse droplet spectrum from either ground or aircraft equipment.

(3) Microclimatology of the area in which the chemicals are being applied should be well known. "There are usually three or four patterns which the weather will follow on any given day," they said. "These can be predicted from past data using information obtainable from small recording weather stations."

(4) If there is any question about contamination of a crop, samples should be taken to a laboratory for analysis. Often a prediction can be made when the crop can safely be harvested.

MATERIALS HANDLING CUSTOM APPLICATION



Fiber glass tanks—on wheels or stilts—

"THEY STOP CORROSION"

CORROSION has long been a problem in the use of liquid fertilizers. Steel tanks serve well enough for alkaline solutions, but the important acid fertilizers eat right through the strongest steel.

Researchers at Texas A & M conducted a series of tests on corrosion of structural materials by fertilizers, insecticides, herbicides, and fungicides and reported that: "Of structural materials tested, only two—Type 302 stainless steel and polyester plastic reinforced with fiber glass—showed complete resistance to all solutions tested."

One of the major farm equipment manufacturers offering fiber glass reinforced plastic tanks is John Deere which incorporates in its No. 31 and No. 50 John Deere sprayers a 200-gallon tank produced by the Molded Fiber Glass Body Co. of Ashtabula, Ohio.

The tank measures 58 $\frac{3}{4}$ inches in length and 32 inches in diameter, but weighs only 55 pounds, compared with 195 pounds for a comparable steel tank and 191 pounds for aluminum. Despite the light weight, this is a rugged material, similar to that used for car and truck bodies, boat hulls, and military planes and missiles.

Another advantage of the fiber glass tank is its translucency which permits the farmer to see the liquid level at a glance. Deere provides a liquid level and gauge for accurate readings.

Resistance to corrosion, of course, is the major reason for introduction of the new tank. Deere recommends it for "practically all liquids common to agriculture" with the exception of solutions of high alkalinity such as aqueous ammonia or those of high acidity such as phosphoric acid. Exhaustive tests conducted in the Ashtabula laboratories of the Molded Fiber Glass Research Co. confirm the caution on pure aqueous ammonia but find no reason to restrict the use of phosphoric acid. According to the lab report, the

tanks will withstand corrosion from most known fertilizer solutions, most insecticides and pesticides, hydrochloric acid to 50 per cent, phosphoric acid, gasoline, xylene, methanol, acetic acid, sulfuric acid to 50 per cent, benzoic acid, citric acid, lactic acid, oxalic acid, stearic acid, tannic acid, and most salts of acids.

Freedom from corrosion not only means money-saving long tank life but assures the farmer that his equipment will be in working condition when he needs it most.

In addition to mobile units such as the John Deere sprayers, the Molded Fiber Glass tanks are used in stationary installations for storage and feeding of farm chemicals. The Liquid Plant Food Co. of Monrovia, Calif., for example, incorporates the tanks in their irrigation systems. The tanks are mounted on simple elevated platforms and feed liquid fertilizer by gravity into irrigation water. The fertilizer flows through small neoprene tubes with adjustable clamps to regulate rate of flow into a stand pipe or wier.

This company finds the light tank easy to install and service. Also, it paints calibration marks on one end of the translucent tank so that the farmer can tell exactly how much liquid he has in the tank.

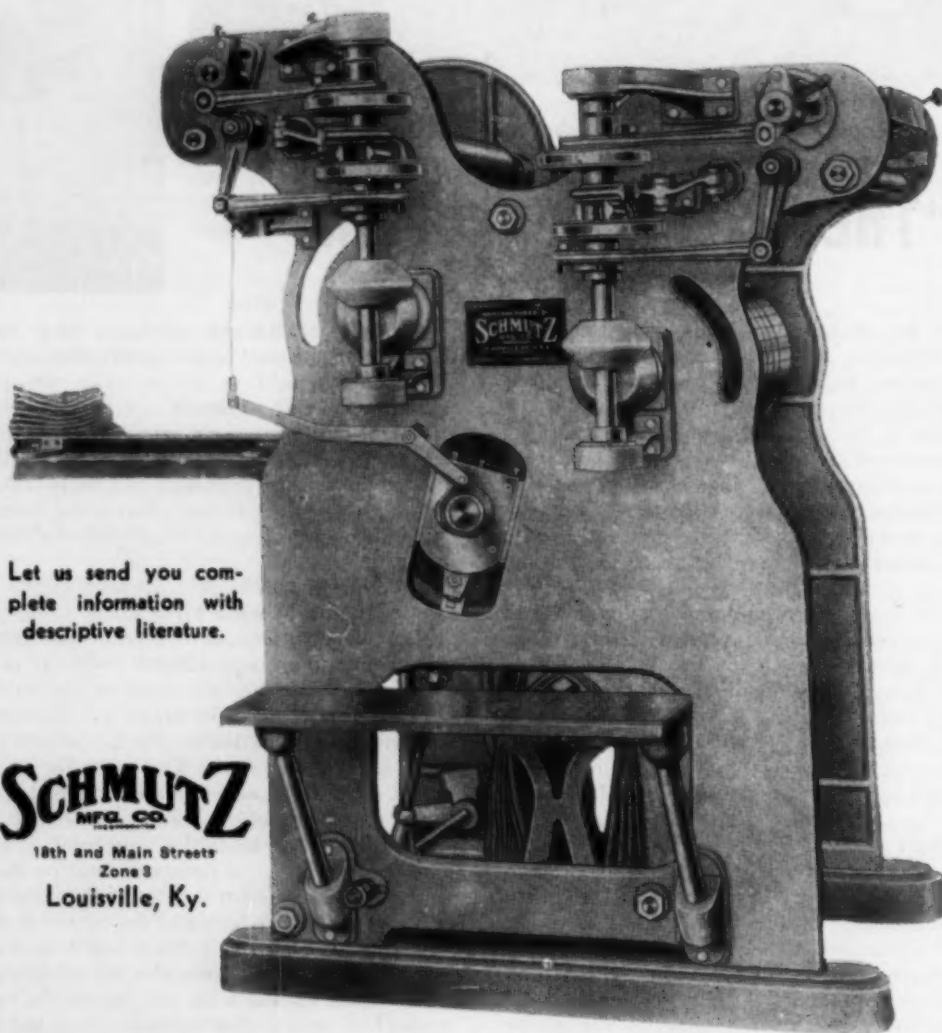
As for corrosion, R. J. Nichols of Liquid Plant Food Co. reports: "Although it was our intention to reserve these tanks for use with acid materials, our need for tanks last spring and summer increased to such an extent we could not restrict their use to acid fertilizers alone. Consequently they have been used for a variety of mixed fertilizers ranging from acid to alkaline. So far, they have been entirely satisfactory, with no visual evidence of damage or deterioration."

Because of the wide variety of possible uses on the farm, the Molded Fiber Glass Body Co. also distributes the 200-gallon fiber glass tanks to equipment dealers for direct sale to the farmer. ▲



Presenting
THE MOST MODERN
BAG PRINTER

Manufactured in
One, Two, Three and Four Colors for
printing made up bags of Paper,
Cotton and Burlap, new and used.



Let us send you complete information with descriptive literature.

SCHMUTZ
MFG. CO.
18th and Main Streets
Zone 2
Louisville, Ky.

Cable Address "SCHMUTZ"—Long Distance Phone CLAY 7771

Alphabetical List of Advertisers

Agricultural Business Co., Inc., Lawrence, Kan.	43
American Agricultural Chemical Co., The, New York City	—
American Cyanamid Co., New York City	—
Armour Agricultural Chemical Co., Atlanta, Ga.	—
Ashcraft-Wilkinson Co., Atlanta, Ga.	Back Cover
Baker, H. J. & Bro., Inc., New York City	—
Baughman Mfg. Co., Jerseyville, Ill.	—
Bemis Bro. Bag Co., St. Louis, Mo.	—
Century Engineering Corp., Cedar Rapids, Iowa	44
Chase Bag Co., Chicago, Ill.	5
Clark Equipment Co.—Construction Machinery Div., Benton Harbor, Mich.	—
Clupak, Inc., New York City	19
Commercial Solvents Corporation, New York City	—
John Deere Chemical Co., Tulsa, Okla.	—
Dicalite Dept., Great Lakes Carbon Corp., Los Angeles, Calif.	—
Duval Sulphur & Potash Co., Houston, Tex.	—
Ferro Corp., Agricultural Div., Cleveland, Ohio	—
Fertilizer Construction Co., Inc., Green Bay, Wis.	—
Fertilizer Engineering and Equipment Co., Inc., Green Bay, Wis.	—
Dave Fischbein Co., Minneapolis, Minn.	—
Flexo Products, Inc., Westlake, Ohio	55
Geigy Agricultural Chemicals, New York City	—
W. R. Grace & Co., Davison Chemical Div., Baltimore, Md.	Third Cover
Highway Equipment Co., Cedar Rapids, Iowa	—
Hollingsworth & Whitney, Div. of Scott Paper Co., Chester, Pa.	17
Hough, The Frank G. Co., Libertyville, Ill.	1
International Minerals & Chemical Corp., Skokie, Ill.	28-29
International Ore and Fertilizer Corp., New York City	—
Johns-Manville Corp., New York City	3
Jokake Inn, Phoenix, Ariz.	55
Kraft Bag Corporation, New York City	—
Marine Products Co., Detroit, Mich.	32
Monarch Mfg. Works, Inc., Philadelphia, Pa.	40
Monsanto Chemical Co., St. Louis, Mo.	—
Niagara Chemical Div., Food Machinery and Chemical Corp., Middleport, N. Y.	—
Owens-Illinois, Toledo, Ohio	—
Plant Food Equipment Co., St. Louis, Mo.	—
Poinsetta Beach Hotel, Ft. Lauderdale, Fla.	51
Potash Co. of America, Washington, D. C.	Second Cover
Rapids Machinery Co., Marion, Iowa	—
Raymond Bag Corp., Middletown, Ohio	Back Cover
Reade Mfg. Co., Inc., Jersey City, N. J.	39
St. Regis Paper Co., New York City	—
Schmutz Mfg. Co., Louisville, Ky.	54
Shuey & Company, Inc., Savannah, Ga.	40
Simonsen Mfg. Co., Quimby, Iowa	6
Sohio Chemical Co., Lima, Ohio	—
Soreno Hotel, St. Petersburg, Fla.	40
Spraying Systems Co., Bellwood, Ill.	—
Spencer Chemical Co., Kansas City, Mo.	11
Star Enterprises, Inc., Cassopolis, Mich.	37
Stedman Foundry and Machine Co., Inc., Aurora, Ind.	47
Successful Farming, Des Moines, Iowa	21
Swift & Co., Chicago, Ill.	9
Tennessee Corporation, Atlanta, Ga.	—
Texaco, Inc., New York City	—
Texas Gulf Sulphur Co., New York City	—
Thomas Alabama Kaolin Co., Baltimore, Md.	—
Union Bag-Camp Paper Corp., New York City	23
U. S. Phosphoric Products, Div. Tennessee Corp., Tampa, Florida	7, 15
U. S. Steel Corp., Pittsburgh, Pa.	—
West Virginia Pulp and Paper Co., New York City	—
John Wiley & Sons, Inc., New York City	39
Wisconsin Alumni Research Foundation, Madison, Wis.	33
Witco Chemical Co., Inc., New York City	—

The Improved

FLEX-A-FOAM Dust Mask



Your best ounce of protection against IRRITATING DUST

HERE'S WHY:

- **Workers wear it.** Lightweight (just 1 ounce), snug, comfortable and easy-to-breathe through, Flex-A-Foam is the one respirator your workers actually welcome.
- **It's super-efficient.** Flex-A-Foam's pure latex filter protects against nuisance dust particles 100 times smaller than the eye can see!
- **It's simple.** Only four sturdy, long-wearing parts — all interlocking — all unconditionally guaranteed.
- **And—it's economical.** Low first cost — less than any other quality respirator on the market. Low upkeep — washable filter outlasts throw-away type by more than 100 to 1!

Dust Protection Your Workers Will Welcome and Wear

Sample
\$1.45
postpaid
(Industrial
price only)



FLEXO PRODUCTS, INC. • Westlake, Ohio

Fill
your life
with
Sunshine

VISIT PHOENIX, ARIZONA

... winter headquarters of Mr. Sun.
Warm, sunny days—cool, crisp nights.
In a garden setting 10 miles east
of Phoenix stands Jokake Inn—one of
the Southwest's finest resort hotels.
Swimming Pool, Tennis Courts, Putting
Greens. All resort activities. Our
own golf and riding facilities.
Distinguished clientele. Informal
atmosphere, casual dress.

JOKAKE INN

Season:
Nov. 15
to May 1

another of the great
ALLEGRETTI
HOTELS

Spotlight on Farm Chemicals ... the Industry and the Magazine

With this issue, which actually signals the beginning of the *third* year of FARM CHEMICALS' marketing approach, Ware Bros. Company, Inc., announces the purchase of the "pioneer journal of the industry" by one of the nation's leading agricultural publishers.

American Fruit Grower Publishing Company, Willoughby, Ohio, will assume publication of this publication which serves both the fertilizer and pesticide industries, with the February 1961 issue.

Under the new marketing approach FARM CHEMICALS has made great strides in serving "total management." Its second annual Farm Chemicals Marketing Seminar (FCMS) was another resounding success.

The writer, who will continue as editor of the magazine, recalls with pride the editorial which appeared on this page just two years ago. At that time we wrote:

"The journalist's irresistible desire to create . . . to fill a long felt need . . . is satisfied with the first issue of volume 122.

" . . . Our purpose is to provide the kind of marketing help that will help make it possible for you to sell more merchandise . . . profitably."

The farm chemicals industry will grow tremendously in the next decade and readers of FARM CHEMICALS, can be sure that FC will contribute immeasurably to that growth.

The financial page of a New York City newspaper in reporting on Texas Gulf Sulphur's recent announcement that it was planning to diversify into potash with an investment that may run as high as \$25,000,000, said "it was another indication that things are looking up in the fertilizer business."

The *New York Herald Tribune* said that Armour, too, was trying to "beef up the low profit margins that traditionally afflict the meat-packers" by pumping some \$60,000,000 into new fertilizer operations" the next several years.

The newspaper continued:

"At last report, for instance, potash and phosphate shipments had advanced by almost 10 per cent and the industry expects that the consumption curve will continue to climb at least 5 per cent over the next decade."

That's a rather glowing report on the fertilizer side. Now what about pesticides?

Well, sales of pesticide chemicals in 1960 averaged three per cent over 1959 figures, totaling an estimated \$285 million at the basic manufacturer's level, according to a December 2, 1960 NAC release.

Of special interest was the gain in herbicide sales. These were reported up seven per cent over 1959.

The report added, however, that "while the sales curve for pesticides has been and will continue upward, profit margins have been narrowing.

"Not only is the discovery of new products becoming more expensive, but expenditures are also rising for product testing to meet the ever increasing requirements for government approvals.

"To maintain profitability in the face of these narrowing profit margins, the industry has stepped up efforts to improve the effectiveness of its marketing operations . . ." the report continued.

Last July the subject of this editorial page was "Everything Depends on a Profit." At that time FC made this proposal:

"Every agricultural college dean, extension agronomist, county agent, and vo-ag teacher in the country should be presented with "The Story of Marketing Fertilizer." (In our editorial we innocently gave at least one reader the impression that there was a booklet or other type presentation available, because we received a request for same!)

We added that the industry should pool its talents to present this "profit story" (in booklet, movie and other forms) to everyone involved in selling fertilizer—not only in a commercial but also in an educational capacity.

We were happy that W. E. McGuirk, president, Davison Chemical Division of W. R. Grace & Co., addressed a portion of the nation's agricultural educators on this subject of *profits* at the annual meeting of the American Society of Agronomy in Chicago last month.

As we stated on this page two years ago, marketing is the *key* to the farm chemicals industry's main dilemma of over-supply and unstable prices.

We intend to stay on that course.

GORDON L. BERG

Newest member of the Davison
team of granulated phosphates...

16-48-0

DAVISON Diammonium Phosphate

MAKES HIGHER ANALYSIS MIXTURES . . . than before—and makes them more easily. 16 units of highly soluble NITROGEN—Plus 48 guaranteed units of AVAILABLE P_2O_5 .
FOR DIRECT APPLICATION . . . an exact 1-3-0 ratio—ready to use and sell . . . beautifully granulated.

FOR DRY MIXING . . . Davison Diammonium affords the dry blend manufacturer the advantages of an ammoniation plant. A balanced 1-3-0 ratio simplifies formula calculations.

READY FOR SHIPMENT . . . right now. Make this profitable new phosphate part of your operation. Call Davison in Baltimore today at SARatoga 7-3900.



DAVISON CHEMICAL Agricultural Chemicals Division, Baltimore 3, Md.

Some formulations of ratios in higher analysis grades using DAVISON 16-48-0

Ratio Analysis	Pounds of Material Required			
	16-48-0	Ammo. Sol. (21%N)	Triple (46% APA)	Potash (60% K_2O)
1-1-1 14.4-14.4-14.4	602	917		481
1-2-2 11-22-22	917	349		734
1-4-2 8.5-34-17	1063		370	567
1-4-4 6.6-26.5-26.5	828		290	882

*Other higher analysis nitrogen materials (urea and ammonium nitrate) may be substituted in above formulations. Analysis in the more popular ratios, such as 12-12-12, 10-20-20, 6-24-12, 5-20-20, can be manufactured by the addition of granular dolomitic limestone or other materials.

HOU-ACTINITE
(Houston Sludge)

LIMESTONE

TUNG MEAL

FEATHER
TANKAGE

VEGETABLE
MEALS

HYNITE

FISH MEAL

BAT GUANO

MAINLY GREEN

SMIROW

NITROGENOUS
TANKAGE

PEANUT HULLS
RICE HULLS

CLAYS

STERILIZED
TOBACCO STEMS

CASTOR MEAL

LANDPLASTER

a complete line of

ORGANICS & CONDITIONERS

for the fertilizer industry

*Free samples and data
gladly supplied on request*

No matter what your needs are — organics, conditioners, nitrogen, potash, or sulphur — Ashcraft-Wilkinson can simplify your procurement problems. We keep tab on materials from hundreds of sources throughout the world. One call to us is all that's necessary.

ASHCRAFT-WILKINSON COMPANY Atlanta, Georgia

District Offices: NORFOLK, VA. • CHARLESTON, S. C. • TAMPA, FLA. • JACKSON, MISS. • COLUMBUS, OHIO • MONTGOMERY, ALA. • DES MOINES, IOWA